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**"POLAND SHALL NEVER DIE ... WHILE WE YET LIVE"
THE POLISH AIR FORCE IN SEPTEMBER 1939**

small air forces observer

the newsletter of the Small Air Forces Clearing House

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SAFO EDITORIAL POLICY: The purpose of the SAFCH is to "promote interest in the history and modeling of the aircraft of the smaller countries". In support of this goal, the SAFCH encourages international cooperation in researching the history of aviation on all aspects of aviation, both military and civil, from all periods of time, and for all the smaller countries. In return for this support, members are asked to submit occasional progress reports for publication in the SAFO. While the final results should appear in the most prestigious publication possible, it is requested that the SAFCH be mentioned (with address) in the article and that SAFO be afforded the opportunity of reprinting the material.

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SAFCH BOOK AUCTION: One of our South African members has sent us a copy of the photographic book, THE SAAF AT WAR 1940-1984, autographed by the authors. (See the review of this book in this issue.) He requests that the book be auctioned off and that \$8.00 of the money collected be donated to the SAFCH Sponsorship Fund. The cost of the book is R60 (approximately \$22.00 at the rate of exchange on 28 June 1989). Please send your bid to the SAFCH editorial office. The highest offer received before 1 November 1989, will win the book.

GUEST EDITORIAL: "I feel I must bring up a point mentioned earlier in the SAFO. Over the last 18 months, or so, I have written to a number of SAFCH members in reply to their requests for info on various matters, as

published in SAFO. However, many of these letters have gone unanswered. To my way of thinking, this is pretty bad manners, to put it mildly. In the long run, it certainly makes you a bit reluctant to put your time and energy into answering pleas for help." [Editor's note: If I publish your request for information, please try to answer all letters. Don't let your forgetfulness diminish the spirit of international cooperation for which the SAFCH stands.)

50TH ANNIVERSARY ARTICLES: The articles on the September Campaign that appear in this issue and the next will set a very high standard of scholarship and enthusiasm for the articles to follow in our series commemorating the 50th anniversary of the start of WWII. Articles are still needed for other countries: Countries to be covered (with approximate dates) include: Finland (Jan. '90); Denmark & Norway (April '90); Holland & Belgium (July '90); French Indochina & Thailand (Oct. '91); Baltic Republics (Jan. '91); Yugoslavia, Greece, Bulgaria (April '91); Bulgaria (April '91); Syria & Iraq (April '91); Hungary, Romania, & Slovakia (July '91). These were the main events (and I may have omitted a few), but there undoubtedly many minor skirmishes that deserve telling. What is needed now are persons to coordinate efforts on each of these topics.

COVER COMMENTS: A line from the Polish national anthem and a view of a PZL P-11a of 113 Sqd. introduces our special issue on the Polish Air Force in the September Campaign. (Choloniewski)

PHOTOGRAPHS (page 66)

- Avia B-534 in fake Polish markings for German propaganda film. (via Cizinsky)
- PZL-37Abis Los at Warsaw-Okecie airfield probably in late 1938. (via Przymusiala)
- & d. Two photos showing the P-11c during 1989-restoration work at PZL/WSK in Warsaw. (Przymusiala photo, JMK archive)
- A poor quality photo (worthy of reproduction because of its rarity) shows a RWD(LWS)-14 Czapla from a training unit. (via Przymusiala)

PHOTOGRAPHS (page 82)

- Bartel BM-5d, white "76", underwing code probably 76R, evidence number unknown. Aircraft in "khaki" overall with natural metal cowl and white center section of upper wing. (via Przymusiala)
- PZL P-11c captured by the Germans. The machine (white "10", under-wing code 121N, evidence number 8.79) belonged to 113 Fighter Flight and was flown by ppor.pil. H. Dudwal (4 victories in the September Campaign). The upper part of the fuselage behind the pilot's headrest has been removed. Note the added access panel for the radio, the partly-removed chessboards on the upper surface of the wing, and the white stripe on the starboard wing. (via Przymusiala)
- Lublin R-XIII at a dispersal airfield. (Choloniewski collection)

BACK COVER: German map showing the pre-war borders and the division of Poland between the Germans and Russians. (via Przymusiala)

AUSTRALIA

AUSTRALIAN PLASTIC MODELLER'S ASSOCIATION (APMA, PO Box 51, Strathfield, NSW 2135; 4 issues airmail A\$ 18.00).

1/89 (24 pages) "PR P-51 Variants" 2 pages including 4 side-view drawings (French & RAAF). "Gallic Spitfires" 2 pages including 7 side-view drawings. "Indonesian Bell" one page including one side-view drawing of Bell 204B. "Far East Meatboxes" 7 pages including 16 side-view drawings of RAAF Meteors. "Balkans Part 3" 2 pages including 6 side-view drawings of British aircraft. "Mainland F-6" 1/2 page side-view drawing of Chinese Shenyang F-6.

NEWS AND VIEWS (IPMS NEW SOUTH WALES, PO Box 637, Broadway, NSW 2007; 4 issues A\$ 20.00 surface or A25.00 air mail).

1/89 (20 pages) "Airliners 1919-1939" 2 pages of side-view drawings (Fokker Universal, AEG Kabine, Junkers F-13, Curtiss AT-32, & Tupolev ANT-9). "Qantas Boeing 747" 14 pages including side-, top-, and bottom-view drawings of 7 aircraft, details, & tables.

AUSTRIA

OFH NACHRICHTEN (Oesterrichische Flugzug Historiker, Kannwegasse 1/15, A-1150, Wien).

1/89 (24 pages) "Silver Birds Karo As" 6 pages including one photo and 3 full-page drawings.

BELGIUM

KIT (IPMS Belgium, Te Couwelaarlei 103 bus 21, B-1200 Deurne/Antwerp; 4 issues for US\$ 13.00, add \$3.00 for airmail, no personal checks accepted).

#72 (26 pages) "Alpha Jet Bat Bird" 11 pages including one color photo, 8 b&w photos, 1/72- and 1/48-scale drawings. "The Fighting Falcons of Florennes" 6 pages including 2 color photos, 8 b&w photos, and 4 side-view drawings.

#73 (26 pages) "F-84F Thunderstreak in Belgian Service: Part 2" 15 pages including 19 photos, 5 pages of side- and plan-view drawings, and table on individual aircraft.

BRAZIL

EM ESCALA (IPMS Brazil, Rua Arquias Cordeiro, 316 S/502, CEP 20770, Meier, RJ. Subscription is \$7.00, but they prefer to receive kits or accessories. Send material to Antonio Pereira Linhares at the above address.)

1/89 (20 pages) "F-5E Tiger na FAB" 1-1/2 pages including 3 side-view drawings and 3 drawings of squadron insignia. "KC-137 eAT-26" one page of drawings to add to earlier article. "Insignias Egipcias e Sirias" one page of drawings of national insignia. "Piper Cub J-3" 2 pages of scale drawings.

CANADA

RANDOM THOUGHTS (IPMS Canada, Box 626, Stn. B, Ottawa, Ontario K1P 5R7; 6 issues for US \$16.00 in US \$18.00 elsewhere).

6/19 (24 pages) "Canadair CT-114 Tutor" 12 pages including 11 photos of aircraft (One Malaysian), and 14 photos and 5 sketches of details. "CL-41R" 7 pages including 3 photos of the aircraft, 4 photos of details, and 3-view drawing.

ENGLAND

MAGAZINE (Neil Robertson, 16 Green St., Greasbrough, Rotherham, South Yorkshire, S61 4EF, 6 issues for £12.00. US subscription agent: Wise Owl Publications, 4314 West 238th St., Torrance, CA 90505; \$22.00)

1/89 (32 pages) "AV8B Update" 3 pages including 2 pages of camouflage patterns. "Hawker Hunter Twin Seater XL621" 3 pages including 4 side-view drawings. "Dutch Spitfires" 2 pages of drawings. "LaGG-3" 4 pages including 3 pages of drawings. "The Football War" 4 pages including drawings of Salvadorean FG-1D, F-51D, & Cavalier Mustang II and Honduran F4U-4 & F4U-5N. Plus 4-page Product Review Supplement.

2/89 (28 pages) "Israeli CH-53" 2 pages including one photo and a side-view drawing. "Photo Reconnaissance Spitfires" 3 pages including 5 side- and top-view drawings. "Modelling the Su-7" 4 pages including a 2-page 1/72-scale drawings, camouflage pattern for Cz. aircraft, and drawings of landing gear details. "Beaver" 4 pages including 7 side-view drawings (one Finnish) and a page of drawings of details. "Photo-Recce Mustangs" 2 pages with drawings of 5 aircraft (French & Israeli). Plus 12-page Product Review Supplement.

PLASTIC KIT CONSTRUCTOR (PKC, 22 Slayleigh Ave., Sheffield S10 3RB, South Yorkshire; USA: J.J. Daileda, 4314 West 238th St., Torrance, CA 90505; 4 issues \$18.00).

#19 (24 pages) "Gilding the Lily" 2 pages in improving the Frog/Novo & Airfix kits. "Lockheed NT-33A" a 2-page conversion article.

ROTOR (4 Sandspit Cottages, Wickhambreaux, Canterbury, Kent, CT3 1SG. Four issues per year. \$20.00 in US from J.J. Daileda, 4314 West 238th St., Torrance, CA 90505)

3/2 Spring 1989 (26 pages) "Mil 24 Hind" 4 pages including scale drawings and kit reviews. "Hughes (MD) Defender/500E" 3 pages including scale drawing and 3 side-view drawings. "Westland Whirlwind, Part 2" 3 pages including 2 side-views (one Brunei). "Hovercraft SR-N1" 2-page review of Airfix kit.

FINLAND

MALLARI (IPMS Finland, PL 798, 00101 Helsinki 10; 6 issues \$20.00, add \$1.00 for airmail and \$1.50 for cashing personal check).

1/89 (24 pages) "Finnish Bf-109G-6" 8 pages including 9 photos and 14 side-view drawings. (Editor's note: Mallari is expanding from 4 to 6 issue per year without any increase in price.)

2/89 (20 pages) Photo of Flying Flea "OH-KAB".

FRANCE

LA VITRINE DU MAQUETTISTE (IPMS France, 73 rue Alexandre Dumas, 75020 Paris; 4 issues 60 FF surface, 80 FF air, back issues 12 FF, "La Lettre de l'IPMS" 25 FF).

#35 ("FW-190 Biplane" 5 pages including 7 photos and 4 side-view drawings, and 1/76-scale drawings. "Bf-109 G-12" 7 pages including 14 photos and 8 side-view drawings. "Spit Trainer" 3 page conversion article.

GERMANY

MITTEILUNGEN (IPMS Germany, Bergengruenstrass 5-7, D-1000 Berlin 38; 12 issues DM 60.00 Europe, DM 65.00 USA, DM 70.00 Japan, DM 75.00 Australia).

2/89 (30 pages) & 3/89 (30 pages) Nothing of small-air-force interest.

ITALY

AEROFAN (Gioglio Apostolo, via Ampere 49, 20131 Milano; 4 issues L 40.000).

6/88 (32 pages) "The 'Sunshine' Puzzle" 8

pages including 11 photos on a 15th AF B-24 that landed in Italian territory. "The Breda 65 in Spain" 3 pages including 6 photos. "Sketchbook: Breda 65 K14" 7 pages including 6 photos on interior, 2-page 1/72-scale construction drawings, sketches of details, and performance tables. "Stefanutti's Stratospheric Fighter" 2 pages with 3-view drawings.

1/89 (36 pages) "37th Stormo: Yesterday and Today" 4 pages including 8 photos. "Fiat G.46: A Trainer of the Fifties" 5 pages including 4 photos of aircraft in trainer competition. "Macchi MC-202 for Swiss Air Force" 2 pages including color side-view drawing of what might have been. "Fiat G.46: The Operational Story" 4 pages including 5 photos. "Macchi M.41 in Spain" 2 pages including 4 photos. "SIAI S.73 in Czech Airline" 3 pages including 8 photos.

3/89 (32 pages) "Short History of the DC-6 in Italy" 8 pages including 11 photos (mostly military) and history of individual aircraft. "The Ghibli in War and in Peace" 5 pages including 6 photos and a striking color side-view drawing. "The Many Lives of Velcro" 6 pages including 7 photos of restored aircraft. "Fiat G-46" 5 pages including 5 photos.

IL NOTIZIARIO (IPMS Italy, CP 182, 41100 Modena Ferrovia; 4 issues 24,000 Italian Lira in Europe or \$18.00 overseas).

3-4/89 (32 pages) "Mil Mi-1 Hare" 5 pages including 8 photos of interior and details and 3 side-view drawings (Polish, Cz., & Soviet). "L'AMI Cambia Look" 8 pages including 12 photos and 10 side-view drawings (F-104G/S, Tornado, G-91R/T, F-84E), and one page of code numbers (make your own decals?)..

JP-4 (JP-4, CP 1550, 50100 Firenze; L 27.000 Europe, L 30.000 elsewhere).

3/89 (98 pages) Photo: Portuguese Epsilon (color). "61 Brigata Aerea" 11 pages including 15 color photos of MB.339. "The Ejercito del Aire's Frontline" 6 pages including 6 color photos (Hornets & C-130). "The Man who Shot Down Visconti" 5 pages including 7 photos.

4/89 (98 pages) Color photos: Bulgarian An-2 'LZ-1098'; East German Su-22 '13'; and Venezulean C-130H '2716'. "60th Brigata Aerea" 10 pages including 10 color photos of Fiat G-91T.

ROMANIA

MODELISM TEHNIIUM (Rompresfilatelia, PO Box 12-201, Bucuresti, Calea Grivitei 64-66, ROMANIA; one year - 4 issues - \$10.00.)

4/88 (32 pages) "Savoia JRS-79B" 6 pages including 13 photos, color side-view drawings, color painting, 2 side-view construction views.

1/89 (32 pages) "Savoia JSR-79B" a 4-page scale drawing. "MiG-29" 2 pages including scale drawing.

SWEDEN (Compiled by Leif Hellstrom)

FLYGHISTORISKT MANADSBLEAD (Swedish Aviation Historical Society, Box 308, S-101 24, Stockholm; 10 issues SEK 260.00 air mail.)

1-2/89 (24 pages) Photos: Sk-12, Sk-14, Sk-15, Sk-16, J-8, J-9, J-21, J-28A, J-34, JAS-39, AJ-37, B-5, B-17.

3/89 (28 pages) "Flyget pa Ljungbyhed" 16 pages on the RSvAF base at Ljungbyhed with some 60 photos from 1910 to the 1980s.

4/89 (20 pages) "Restoring the B-18B" 2 pages with 7 photos. "A Radial Family" 2 pages on pusher fighters with 10 small side-views. Photos: B-1, B-5, B-18B, J-21A, J-29A, Sk-6.

5/89 (16 pages) "J-30 Mosquitoes" 4 pages with 7 photos (mostly RAF markings) & 4 side-view markings, Photos: B-3 & S-31.

6/7-89 (24 pages) "SAAB 210" 2 pages including 3 photos and 3-view drawing. "The first J-26" 2 pages about interned P-51 with 5 photos. Photos: A-32, AJ-37, Austrian Draken, Fjallback Monoplane of 1915.

KONTAKT (Kontaktgruppen, Box 4015, S-422 04 Hisings Backa; 5 issues SEK 160.00 air mail)

#90 2/89 (32 pages) "TP-83 Pembroke" 24 pages with 23 photos, 4-view drawing, 6 side-view drawings, and list of all RSvAF Pembrokes.

#91 4/98 (28 pages) "S-31 Spitfire" 14 pages with 11 photos, 1/72-scale 5-view drawing, sketches of camera installation, and list of all RSvAF Spitfires. 3-view drawing of SAS Sunderland IV. Photos: J-21A, B-3, & Sk-12.

#92 6/89 (32 pages) "SAAB 29 Prototypes" 11 pages including 16 photos. 1/72-scale 4-view drawing of HKP-9A/B. Photos: Sk-61, FPL-61, JAS-39 wreck, & B-3.

SWITZERLAND

VIRUS PLASTICUS (IPMS-Switzerland, c/o Mathias Weichelt, Zeltgstrass 27, 3027 Bern; 4 issues 35 SFr)

1/89 (32 pages) & 2/89 (32 pages) Nothing of small-air-force interest.

USA

WWI AERO (Leonard Opdycke, 15 Crescent Rd., Poughkeepsie, NY 12601; 5 issues \$ 20.00).

#124, May '89 (122 pages) "Pfalz D-XII" 19 pages including 33 photos, 4 side-view drawings (one Belgian), scale drawings, 5 pages of drawings of details. "SE-5E" 7 pages including 9 photos. "Fokker C-IV" 2 pages including 2 photos. "Montgomery" 16 pages including 7 photos, 4 pages of scale drawings, 6 pages of drawings of details. "Roe Triplane Mk I" 9 pages including 18 photos and 2 scale drawings. "German Naval Insignia and Colors" 4 pages including 2 pages on marking specifications. "Cockpits/Instruments" 7 pages including 12 photos and 3 pages of sketches.

SKYWAYS (World War I Aeroplanes, 15 Crescent Rd., Poughkeepsie, NY 12601; 4 issues \$ 20.00)

#10 April '89 (76 pages) "The Junkers Ju-52/3m" 8 pages including 10 photos. "QED and 'Times Flies'" 4 pages including 4 photos. "Fleet Biplanes" 10 pages including 19 photos. "Alaska Airways and NC20K" 10 pages including 15 photos and 2-page 3-view drawing of Savio Marchetti S-55P. "Air National Guard" 8 pages of 17 photos. "Fokker Netherlands: Multi Engine Planes of the 1920s" 4 pages including 3 photos and 4 small 3-view drawings. "Chronology Highlights: 1938-1939" 4 pages including 5 photos. "Waco YKS-7 Reborn" 2 pages including 5 photos. "Nardi FN-305" 2-page scale drawing. Cockpits: Grumman JF-1" 4 pages including 8 photos. "DH-4B's of the 91st" 3 pages including 7 photos.

PRI-FLY (IPMS Washington DC, c/o Carol Fleckenstein, 13816 Choptank Ct., Centreville, VA 22020; 4 issues \$7.00 for US, \$8.00 all others).

#71 June 1989 (16 pages) Nothing of small-air-force interest.

FULCRUMS & ELEFANTES

"I have some comments about the sketches of the Fulcrum in SAFO #49: The artist has captured the lengthened chord rudders well, except that the trailing edge of the empennage should line up with the trailing edge of the fin above the rudder, not the rudder itself. In the front quarter view, the IRSTS 'bubble' should be offset to the right side of the aircraft, the 'odd rods' IFF/SIF antenna should be lined up on the centerline of the aircraft, and the pitot tube should have small 'stakes' along the sides. The item drawn below the cockpit appears to be similar to the Gsh-23 gun installation on the MiG-23; if so, it should be deleted since with a 30-mm gun in the wing roots, as accurately depicted, a 23-mm gun in the belly would be redundant. I don't remember the Fulcrums at Farnborough having wingtip pods as depicted in the rear quarter view of the single seater. Finally, there are five (vice three depicted on the single seater and none of the twin seater) auxiliary 'blow-in' doors on the upper side of the strake/wing fillet. The December 1988 issue of AIR INTERNATIONAL depicts all of this very well - although I would not put too much stock in their technical assessment (American analysts are not nearly so impressed and have much more to base their opinion upon).

"The paint scheme on the Farnborough Fulcrums was a gloss green and grey (as highlighted by all of the silvery reflection off the side of the aircraft on the cover of said issue of AI. From talking to the Soviet aircrew at Farnborough, I learned that this is supposed to be the 'standard Soviet air superiority/defense paint scheme'. This contradicts the claim for the 'three tone grey' scheme made in a recent SCALE MODELER article. The author of this article went on to say that the paint scheme was glossy due to peace-time requirements for keeping the aircraft clean and it would be 'toned down' in the event of war. It may be a special 'show' paint, but this was denied by the SovAF crews at Farnborough. The two aircraft were from a special V-VS unit based near Moscow and coded 'blue 10' and 'blue 53'. 'Blue 08', in almost an identical paint scheme, was the Fulcrum that Secretary of Defense Carlucci was allowed to climb into on his visit to the Soviet Union last year. This suggests that at least all of that unit's aircraft are painted in this way - if not the entire V-VS inventory. This is said with full knowledge that the Fulcrums that went to Rissaia in 1986 did sport a grey scheme. So, perhaps there was a change - or was it, in fact, a show scheme (and the Soviets lied again). Interestingly, the 16 Fulcrums delivered to the Yugoslavian AF (coded 101 through 116 of which 101, 102, 104, 107, 110 and 112 are confirmed to be single seaters) were delivered in the two (or three?) tone scheme. So perhaps the matter of paint schemes has yet to be settled. (Or the answer may depend on which Airframe Manufacturing Plant produced the one you want to model.)

"I applaud the quality of the entire SAFO #49. I particularly liked the 'Small Air Forces of the British Colonies', by Lennart Andersson - very well done.

"I would also like to express my gratitude to Santiago Flores. His articles in issues #43, 46, and 47 are some of the most professionally written and documented information to be found anywhere, including AEROSPACE HISTORIAN.

"I also appreciate Dan Hagedorn's letters since he raises interesting questions and provides excellent 'filler' information. If I may, I would like to address his letter in SAFO #47, where he speculates that TNCA Serie B 'El Elefante' might be somehow related to the TNCA Serie B Parasol no. 4. Not being an expert and having only the material printed in our fine magazine to go from, I would like to suggest that 'El Elefante' may be the large biplane in the top photo on page 62 of SAFO #43. The caption refers to it as an 'early Serie B' and it certainly is larger than the Serie A's lined up beside it. Its number '7' does not fit into Santiago's list in either SAFO #43 or #46, but the date of the photo (Oct/Nov 1917) does not contradict the date Santiago gives for 'El Elefante' (1916). Could it be that Serie 4B was a parasol and the Serie 7B was a biplane? Given the numbering system described in SAFO #43, I believe this could be. Will we ever know?"

Douglas Dildy (SAFCH #884), PSC Box 10162, APO NY 09012.

BOOKS & MAGAZINES FROM EUROPE

"I've been getting the SAFO regularly from Jack Beaumont's Aviation Bookshop in London and I thought is about time I dropped you a line to congratulate you, and the members, for the fascinating and informative material that SAFO contains.

"With reference to the review in SAFO #48 of the Hungarian 'Aero Historia', I have numbers 1, 2, and 3. I obtained no. 1 purely accidentally here in the UK and then tried deciphering the address (which I think turned out to be the same as you stated in your review). After much perseverance, I eventually got a reply from a contact in Hungary. I have also obtained copies from a Czech pen-pal who bought them at the museum in Budapest. I don't think they are obtainable anywhere else. If any SAFCH members are really desperate to get a copy, I am prepared to write to my Hungarian contact and ask him for more of the back issues though I have absolutely no guarantee of him saying yes.

"In the same issue of SAFO there was a review of the large Dutch book 'Vlucht door de Tijd'. I wasn't aware that this was actually published for the Air Force as I obtained a copy about a year ago from a book seller in the Netherlands. If anyone is interested, it cost me 59.50 Dutch guilders plus postage and the dealer's address is: H. de Weerd, Middellaan 34, 7314 GC Apeldoorn, the Netherlands.

"I am not sure if all the members are aware of a new high-quality French military magazine that started up last year. It is after the style of 'Air Fan' (by ex Air Fan people, I believe) and is almost totally in colour with superb reproductions and thus is expensive. All issues so far have been of 68 pages and all photos have English captions. It has extensive model and book reviews in addition to the main articles. It started off being published every two months, but is now monthly - the January 1989 issues was number 5. Subscription details are: 420 French francs to Guhl & Associates, 5 Passage Lepic, 75018 Paris, France. A quick resume of items which may be of interest to SAFO readers (omitting French items which seem to be in most issues) follows. Issue #1: RAAF Hornets with 10 photos (Hornets, Mirage, Sabre, Meteor, & Vampire); Hungarian AF with 7 photos (MiG-23, Ka-26, Mil-2, AN-26, (continued on page 83)

A PLAN FOR DEFEAT

It has often been said that in that fateful September fifty years ago, the Polish Air Force was defeated by a superior force of superior aircraft flown by superior aviators. Hitler's wartime propaganda machine ensured that the myth of destroying the LOTNICZY WOJSKOWE on the ground and of the awesome invincibility of the Luftwaffe would be a lasting legacy. In fact, Tony Wood and Bill Gunston's excellent chronicle of Hitler's Luftwaffe does nothing to dispel the myth.(1)

It is not the purpose of this series to adjudge the relative merits of the opposing warplanes. Neither could I argue that the Lotniczy Wojskowe (L.W.) enjoyed a numerical superiority over the Luftwaffe! And perhaps the combat veterans of the Condor Legion were better trained than the untried Polish defenders. But the legacy left behind is one of the dauntless bravery and indomitable spirit of the plucky defenders as well as of the overwhelming superiority of the fierce aggressors.

The questions this article seeks to address is: how did the Polish Air Force choose to fight? What was its doctrine? How did it organize and use the limited and largely obsolescent aircraft with which it was equipped?

While these questions may seem more appropriate for a professional military journal rather than for SAFO, perhaps their answers will help the modelers of this particular (ill-fated) Small Air Force know more about the background and the historical context behind the PZLs, RWDs and Lublins that they may be motivated to construct in the near future. The purpose of "A Plan for Defeat" is to provide SAFCH members with an overview of the Lotniczy Wojskowe as it was at the outset of the September Campaign; its doctrine and its disposition and a brief look at the enemy which it faced. Since doctrine largely dictates the disposition of air forces at the opening of a set-piece campaign such as "Operation Ostmarkflug"(2), (also known as "Case White") let's begin there.

Doctrine

At the time of war, aviation shall be used principally for the purpose of reconnaissance and liaison.

Marshal Jozef Pilsudski
Commander-in-Chief
Polish Armed Forces (3)

By 1939 the Lotniczy Wojskowe appeared to have finally outgrown its strictly Army-support orientation. But, when initially established in November, 1918, the L.W. consisted of three groups, later known as PULK LOTNICZY ("Air Regiments"). After the 1920 Russo-Polish War, each Air Regiment was tied to a particular army formation and stationed around the perimeter of the country. The purpose of the Air Regiment was to supply the commander of that particular army with direct, immediately available support. This support consisted of observation and reconnaissance of enemy positions, offensive fire-power and defensive fighter cover.

Under the progressive leadership of General Wlodzimerz Zagorski' (1924-1926), the L.W. expanded in size and its doctrine was developed more completely. Each Pulk Lotniczy

was organized into three DYWIZJON (literally "Wings" and called "Dyons" for short). Each Dyon usually consisted of two 9-or 10-plane squadrons (ESKADRY) and performed a particular role in support of the regional army commander. The names of the Dyons went through a formative process and finally resulted in the following:(4)

DYON	Title	Role
I	Dywizjon Liniowe	Attack
II	Dywizjon Towarzyszace	Army Co-operation (Observation/Recce)
III	Dywizjon Mysliwskie	Fighter

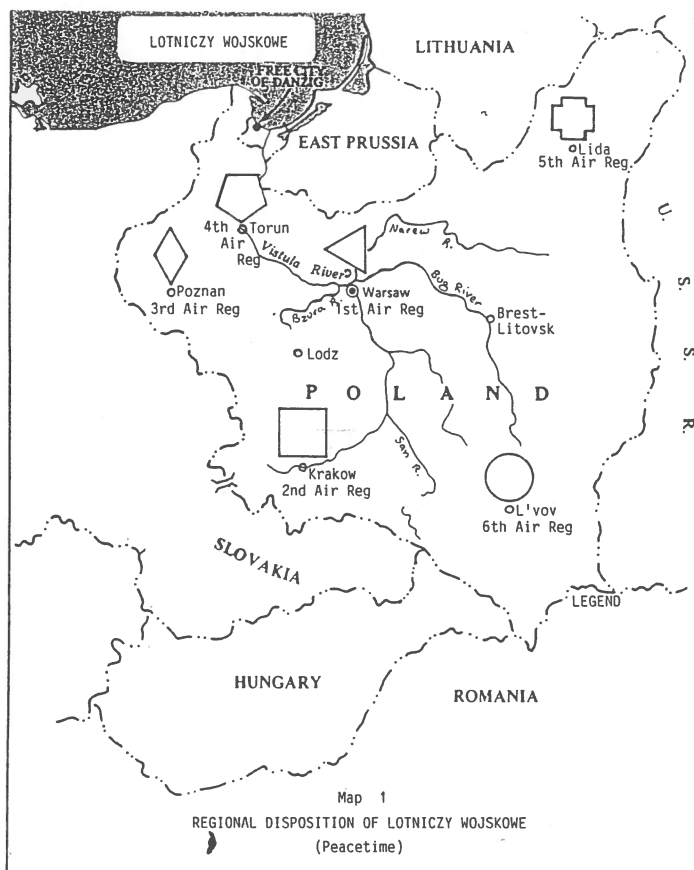
Theoretically, each army stationed around the nation would have a nicely balanced air group immediately at hand under the direct command and control of the army commander. Thus, doctrinally, from the mid-20s to the mid-30s, the L.W. was an intensely army-support oriented organization designed to assist the individual army commander in the conduct of the defense of his area of responsibility (region) of the country.

By the end of 1938, the Lotniczy Wojskowe had grown to six Pulk Lotniczy based around the country. For recognition of the Regiment's aircraft in the air, each Regiment had a "shield" of a geometric design (upon which individual squadron emblems were depicted) painted upon the fuselage of most aircraft in the unit. The designations, locations and shield shape of the L.W. Air Regiments were:(5)

Air Regiment	Location	Army Assigned (as of Sep 39)	Shield Shape
1	Warsaw	None	Triangle
2	Krakow	Army Krakow	Square
3	Poznan	Army Poznan	Diamond
4	Torun	Army Pomorze	Pentagon
5	Lida	Redistributed	Cross
6	Lvov	Reassigned to Army of Lodz	Circle

It must be emphasized that there were exceptions to the above rule; for instance, the 111th, 121st and 122nd Fighter Squadrons retained their traditional markings (6) and the Army Co-op Squadrons rarely carried Pulk markings. Also, some individual aircraft did not have these markings or carried them only on one side (7). However, I have chosen to use them to indicate the locations of the six Pulk Lotniczy on Map No. 1. With it you may more easily visualize the regional disposition of the Polish Air Force under its rather strict army-support oriented doctrine.

However, the winds of change were stirring the air. By the late-30s, the theories of air power advocates from Douhet to Mitchell were also being read in Warsaw. Led by General Ludomil Rayski, Chief of the Air Service (1926-1939), the "free thinkers" of the Lotniczy Wojskowe began to imagine that they needed to be able to do more than just support the army in the defense of various regions (8). They felt that Poland needed a concentrated organization of fighter and bomber aviation, under the command of the Commander-in-Chief (CinC) of the Polish armed forces, able to meet the attacks of a potential enemy and to deal offensive blows to him. Thus, by 1939, the Polish Air Force had created within itself the first exception to its basic doctrine, what has become known as the "Dispositional Air Force."



Dispositional Air Force

The "Dispositional Air Force" was very much the natural organizational evolution precipitated by the arrival in the L.W. inventory of an altogether new concept in combat aviation: the bomber. Specifically, the PZL P.37 Los ("Elk").

The Panstwowe Zaklady Lotnicze (National Aviation Establishment) or PZL company had been able to consistently meet the needs of the Lotniczy Wojskowe since its formation in 1928 (9). In 1930, PZL pioneered the beginning of the transition of fighter aviation from the cloth and fabric, opened cockpit, fixed gear biplane towards the all-metal, monocoque, canopied, retractable gear monoplane. In its conservative approach, PZL introduced the P.7a, a monoplane of all-metal construction that retained the opened cockpit and fixed gear. In the mid-30s, the company refined the concept with its P.11c and entered into large-scale production while its design staff turned to the L.W.'s next need, a more efficacious ground attack aircraft for its "Line" Dyons. It further refined its techniques for monoplane construction, eliminating strut bracing, and enclosed the cockpits in its P.23 Karas ("Crucian Carp"). As these aircraft were replacing Potezes and Breguets, PZL, with increased confidence, turned to the challenge of completing the transition to modern combat aircraft with the ambitious project of developing a twin engine, all-metal, retractable-gear, medium bomber.

The first P.37 Los A began arriving in the 1st Pulk Lotniczy early in 1938. When sufficient airframes were available an entirely new Wing, Dyon X, was formed as part of the regiment (10). This eventually led to the formation of an entirely new organization. Medium bombers were not a "tactical" weapon to

be employed by an army commander in a specific region, but instead they were a "strategic" weapon to be used by the highest echelons of national power and in that region of the conflict which would reap the greatest reward.

As a result of this technological development, an organizational and doctrinal development was dictated. This was the "Dispositional Air Force" (DAF). In a plan instituted on 28 June 1939, the 1st Pulk Lotniczy lost its identity as an Air Regiment and became the basis for the DAF (11). Based at the huge Warsaw-Okecie airfield, the DAF consisted of two BRYGADA ("Brigades"): the five squadron Brygada Poscigowa ("Pursuit Brigade") and the nine squadron Brygada Bombowa ("Bomber Brigade"). The plan called for the Bomber Brigade to be made up of over 124 P.37 Los. Unfortunately teething troubles, accidents, groundings and lagging production resulted in only four Los squadrons being operational by the unit activation date. The remainder were "robbed" from the outlying units, filling-out the remaining five squadrons with P.23 Karas Eskadry (12).

Because the fixed gear Karas lacked the range to strike beyond the Polish borders from the central location of Warsaw-Okecie, these units remained at their original locations of Krakow, Lvov and Lida. But they were under the direct command and control of the CinC and his General Staff at Warsaw.

Similarly the Brygada Poscigowa, designed to defend the vital industrial and national nerve center of Warsaw, was reinforced with an additional fighter element. The Pursuit Brigade consisted of the former 1st Air Regiment's two fighter Dyons, III/1 and IV/1. To this force, the largest concentration of fighters in Poland (45 PZL P.11c), was added the third squadron of Krakow's Fighter Dyon III/2, the 123rd Eskadra. This unit was one of the last to still be equipped with the PZL P.7a and, like its P.23-equipped cousins (21st and 22nd Esk), this unit initially remained at Krakow field but under the control of the central command at Warsaw.

The entire Air Order of Battle (AOB) of the L.W.'s Dispositional Air Force is listed at Appendix 1 (13). In some ways this formation may be regarded as the "reserve": that force designed to be committed to only the most important offensive and defensive missions. But, for the sake of this "reserve" the Krakow Air Regiment (and others) was denied forces that it would find it sorely needed at the front. However, this would not be the last instance of robbing front-line units to meet the requirements of L.W. doctrine.

Armies Air Force

The "Armies Air Forces" were those Air Regiments assigned directly to the regional army commanders. As mentioned before, they were intentionally very balanced units with specific army support functions of reconnaissance, attack and fighter cover. Unfortunately, the doctrine of providing every army formation with such an air unit would result in the dissipation of an already thinly distributed air arm.

Mobilization of the Polish armed forces was ordered on 23 August 1939 (14). Four of the five field armies were fully manned and began to deploy to the west to face the now obvious, overtly antagonistic enemy. From the eastern armies and reservists was formed additional armies: Army Karpaty, Army Modlin and Independent Army Group Narew. While this situation provided the perfect opportunity to

reinforce front-line units in the west with the Air Regiments of the eastern Armies (Lida and Lvov) these "extra" assets were redistributed evenly to these new formations in accordance with peace-time L.W. doctrine.

The I and II Dyons of all of the traditional Air Regiments were disbanded and the Line and Army Co-op Eskadry were redistributed among the numerous army formations. Army Poznan's 3rd Pulk Lotniczy lost its 31st and 32nd Line Eskadry to the new Army Karpaty and to the Army of Lodz. Army Pomorze's 4th Pulk Lotniczy lost its 41st Line Eskadra to the newly formed Army Modlin (15). The entire 5th Pulk Lotniczy (normally based at Lida) was redistributed among the three new army formations. The entire 6th Air Regiment, minus its two P.23 Karas squadrons which were by now assigned to the Bomber Brigade, was also transferred from the east to the new Army of Lodz. The resulting AOB for the Armies Air Forces is provided at Appendix 2 (16).

The result of this wide-scale, almost nervous, pre-hostilities shuffle of units was that every army formation had an air element under its commander's immediate control. While appropriate, perhaps, for the Army Co-op Eskadry, the loss of concentration of the very limited offensive and defensive assets meant that the greatest benefit of tactical aviation - the flexibility which allows it to be concentrated when and where desired, at a particular point in time and space that will positively influence the overall conduct of the battle - was lost to the Polish military leadership. What the L.W. so desperately needed, and what the Polish Army so sorely lacked, was a level of command between the individual armies and the CinC: A Front Commander that would coordinate the activities of the two to four armies on a single front, as well as control the use of their assigned air elements. Just as the CinC, attempting to exercise control over seven different army formations was to prove a fatal flaw (17), so also the lack of a centralized command at the front was to result in the useless spending of L.W. strength in piecemeal "penny packets." For balance, however, it is appropriate for us to turn briefly to this awesome enemy that the Polish Air Force faced.

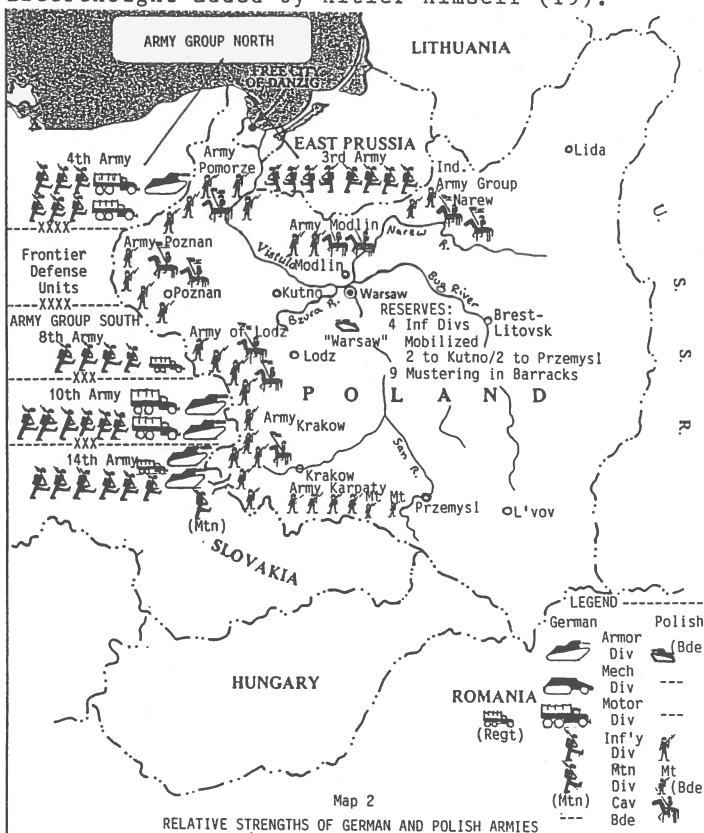
Der Luftwaffe

Generally, the comparisons of the Lotniczy Wojskowe to the might of Hitler's Luftwaffe is limited to the gross contrast of aggregate figures. In the military world, this is a dangerous, misleading and usually unacceptable procedure. It is meaningless to compare 812 twin-engine bombers (Do.17 and He.111) to 36 P.37 Los. Instead, it is far more revealing to compare the 36 Los bombers to the 274 Bf.109s in German Home Defense Squadrons (Luftgaukommando units) and the 812 Luftwaffe bombers to the 161 PZL fighters defending Poland. Fighter-versus-fighter combat would not be between the total of 568 Bf.109s and Bf.110s and the 161 PZL P.7s and P.11s but, instead, between the 161 PZLs and the 199 Bf.109s/95 Bf.110s that would be escorting the 800-plus bombers. But we would like to look at the opposing forces a little more closely than even this.

It is almost equally misguided to assume that all of the short-ranged, fixed-gear P.7a, P.11c and P.23s, spread, as we have seen, so thinly across the several Polish armies, could affect the battle at the point of the aggressor's attack. Despite the fact that

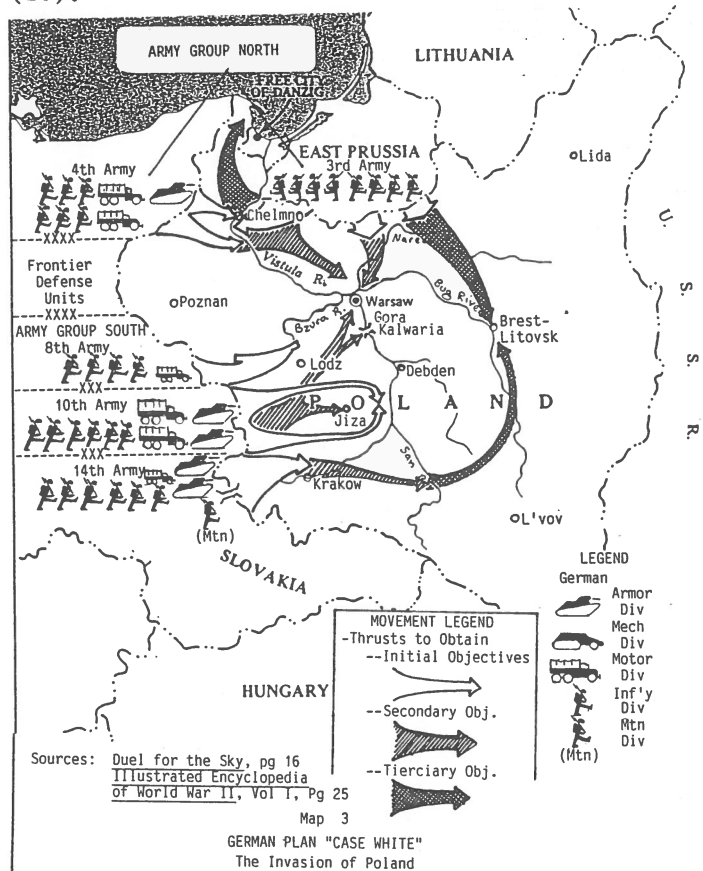
Poland was faced on three sides (East Prussia on the north, Germany proper on the west and German-occupied Czechoslovakia on the south) by the might of the Nazi war-machine, the "Schwerpunkt", or center-of-gravity of the German offensive, would take place across the flat Polish plain at the seam of the Lodz and Krakow Armies. Thus, many Polish air units were out of position to be able to positively influence the outcome of the most crucial part of the campaign.

The Wehrmacht had detailed two Army Groups to the operation. Generaloberst von Bock's Army Group North (AGN), consisting of the 3rd Army in East Prussia and the 4th Army in German Pomerania were to conduct a limited offensive designed to pinch off the "Polish Corridor" and hold (or "pin") Polish army formations in the north to prevent them from reinforcing the defenders in the south. If possible, they would turn and advance in converging paths upon Warsaw from the north and northwest. Meanwhile, General von Rundstedt's Army Group South (AGS) was made up of the eminently more powerful 8th, 10th and 14th Armies. The 10th Army's 1st and 4th Panzer Divisions would spearhead the assault with the 8th and 14th Armies covering the flanks (18). The Wehrmacht plan for "Operation Ostmarkflug" is depicted on Map No. 3. (Comparative divisional strengths of the German and Polish Armies are provided at Map No. 2.) Secondary thrusts by the 3rd and 14th Armies were to result in a strategic encirclement by meeting near Brest-Litovsk, an afterthought added by Hitler himself (19).



Similarly, the Luftwaffe detailed two of its Air Fleets (Luftflotte 1 and 4) to support the operation. Although the Luftwaffe's "Army Co-operation Groups" (Aufklarungsgruppe) were, like their Polish counterparts, subordinated directly to ground (divisional and corps) commanders, the Luftflotten offensive and defensive units were under the command of the rather more independent Luftwaffe Generals

Kesselring (Luftflotte 1) and Loehr (Luftflotte 4). According to the plan, Loehr's Luftflotte 4, supporting the AGS was to eliminate the Lotniczy Wojskowe forces in the route of advance and closely support the spearheading Panzer units, while, in a separate operation ("Seebad" or Seaside) Kesselring's Luftflotte 1 would conduct massive raids against the Polish heartland (Warsaw) as well as support the pinching and "pinning" operations of the AGN (20).



The disposition of German forces ranged against the L.W. are graphically depicted on Map No.4. Each airplane shape represents a squadron size unit. Listed below, in Table 1 is the line up (from north to south) of the primary Luftwaffe unit and the Polish forces deployed against them.

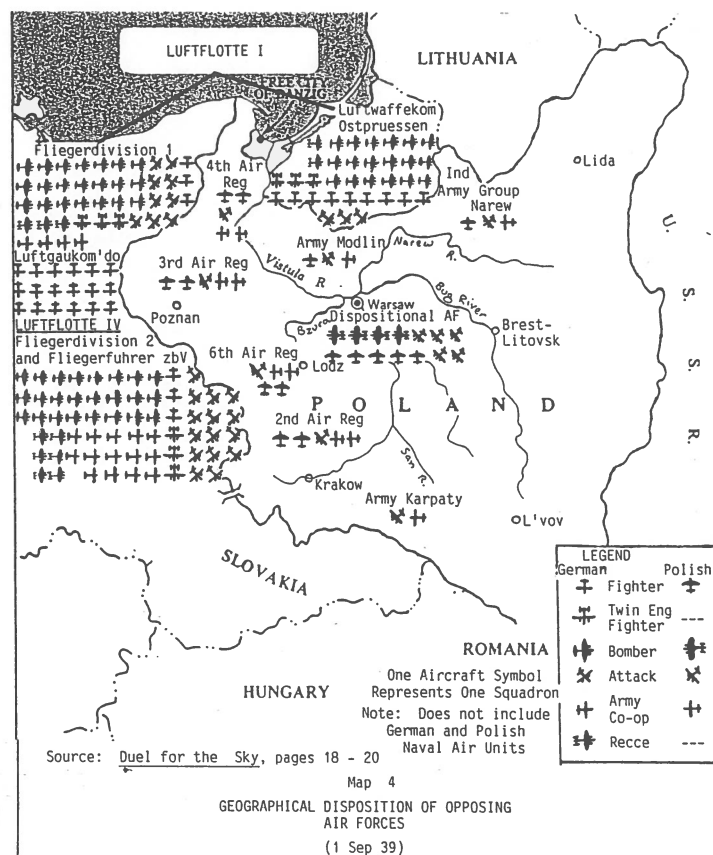
With the concentration of Stukas and Hs.123s in Luftflotte 4's Fliegerfuhrer zbV, it is easy to see that this would be the point of the Nazi dagger which would drive into the gut of Poland. Unfortunately for the nation of Poland, the German hierarchy had managed to keep their designs on this broad, flat land secret for months. In fact, until 1939, the Polish Army Staff still believed that the greater threat came from the east, the Soviet Union. Plan "W", a plan for the defense of Poland against the U.S.S.R., was only completed at the end of 1938, after 12 years of preparation (22). Only after the "Annexation" of the rest of Czechoslovakia (after the Sudetenland) on 15 March, 1939, did the Polish CinC, Marshal Rydz-Smigly, awaken to the fact that the hungry wolf had turned to his homeland (23). Hastily, Plan "Z" (or "Zacod" for "West") (24), the plan for the defense of Poland against Germany, was thrown together. However, no matter how good, Plan "Z" could not make up for the deficiencies inherent in the Polish Army or Air Force. Nevertheless, with the mobilization of 23 August, 1939, the dauntless

Table 1
Opposing Forces of the Polish Campaign, Sep 39 (21)

LUFTWAFFE UNITS	LOTNICZY WOJSKOWE
LUFTFLOTTE 1 (Kesselring)	
- Luftwaffen Kommando Ostpreussen JG 1*, JG 21*, ZG 1*: (one gruppe each - 119 Bf.109) StG 1 (one gruppe - 38 Ju.87) KG 2 (81 Do.17E) KG 3 (83 Do.17Z) LG 1 (91 He.111H/32 Bf.110)	- Army Modlin 152 Esk (10 P.11) 41 Esk (10 P.23) 53 Esk (7 RWD.14)
- Fliegerdivision 1 LG 2*, ZG 1 (one gruppe each - 32 Bf.110/ 36 Bf.109) StG 2 (two gruppen - 78 Ju.87) LG 1 (one gruppe of 39 Ju.87) KG 1 (82 He.111E) KG 26 (75 He.111H) KG 27 (94 He.111P)	- Army Pomorze Dyon III/4 (22 P.11c) 42 Esk (10 P.23) 43 & 46 Esk (14 R.XIIID)
- Luftgaukommando III (Home Defense) JG 2, JG 3, JG 20: (three gruppen total plus two nightfighter sqdn - 129 Bf.109)	- Army Poznan Dyon III/3 (22 P.11c) 34 Esk (10 P.23) 33 & 36 Esk (14 R.XIIID)
LUFTFLOTTE 4 (Loehr)	
- Fliegerdivision 2 KG 4 (102 He.111P) KG 76 (84 Do.17Z) KG 77 (119 Do.17Z)	- Army of Lodz Dyon III/6 (12 P.11/10 P.7) 32 Esk (10 P.23) 63 Esk (7 R.XIIID) 66 Esk (7 RWD.14)
- Fliegerfuhrer zbV ZG 2*, ZG 76 (one gruppe each - 44 Bf.109/ 31 Bf.110) LG 2 (one gruppe of 40 Hs.123) StG 2 (one gruppe of 38 Ju.87) StG 76 (one gruppe of 39 Ju.87) StG 77 (76 Ju.87)	- Army Krakow Dyon III/2 (20 P.11c) 24 Esk (10 P.23) 23 Esk (7 RWD.14) 26 Esk (7 R.XIIID)
- Luftgaukommando VIII (Home Defense) JG 76, JG 77 (three gruppen total - 145 Bf.109)	

* Denotes those fighter units assigned bomber-escort duties (in addition to the Bf.110 units)

Note: Aviation units assigned to Army Karpaty and Ind Army Grp Narew position were not in a position to affect balance of strength at front



aviators and their immediate commanders quickly began to complete some rather clever, last-minute preparations in order to better even the odds and enable them to give a stirring account of themselves.

Last Minute Preparations

With the mobilization and the redistribution of units which accompanied it, the Pulk, Dyon and Eskadry commanders did everything within their power to prevent the accomplishment of the Luftwaffe's first objective: the destruction of the Lotniczy Wojskowe on the ground in the first days. For the last three weeks in August, the plucky PZL fighters had been attempting to intercept Do.17P reconnaissance planes that ranged across Poland (25). While the high speed and high altitude of these machines precluded successful intercept, it did betray the Luftwaffe's initial targets: L.W. airfields.

In order to execute its army-support doctrine, the L.W. Eskadry were well practiced in operating from unimproved fields. In fact, each unit had pre-selected several possible "campaign landing fields" where their aircraft could be concealed among the trees. From 23 to 28 August, the L.W. units deployed and began operations from these fields. On the original L.W. air bases obsolete, training and maintenance "hangar queen" aircraft were parked in positions vacated the deploying operational types. This made it appear that the unit was still on its "home" field. In the next week this would lead to a misdirected waste of the Luftwaffe's initial effort, spare the L.W. units for some time, and, ironically, contribute greatly to the myth that the Polish Air Force was wiped out on the ground on the first day! (26)

The dispersed operation would be limited by two factors: fuel and communications. In a painful lack of forethought, the L.W. had neglected to procure ground support equipment that was required for any modern air arm. Unbelievably, it had no fuel trucks at all. Even at their "home" fields, aircraft had to be refueled by hand from "Jerry cans" and drums (27). Also, there was an almost complete lack of radios and an insufficient number of field telephones. Contact with the field commanders for which they "worked" was dependent almost entirely on the rudimentary commercial telephone/telegraph network (28). During a retreat (or advance) the unit would quickly be lost to the army commander due to his inability to contact it!

The Do.17 overflights also provided the Poles with opportunities to exercise their observer alerting and reporting system. The L.W. had established a network of "eyeball Radars" - an observer corps - which would alert the L.W. operational headquarters in Warsaw of an incoming bomber raid (29). While of little use to the field army commanders because of the shorter distances and times involved, this did provide the Pursuit Brigade with the ability to execute as it was intended: to rise in-force to meet a massive attack on the nation's capital. Thus, the PZLs would not have to waste its strength on "standing patrols" around the city, but, instead, could husband its meager resources and use the flexibility inherent in air power to blunt or deflect the inbound blows of the aggressor.

One myth that has grown up about this preparation concerns the repainting of markings and camouflage. Combat Aircraft of World War Two and Flying Colors depict a PZL P.11c with a tan/green/olive "splinter" camouflage scheme

(30, 31). [Editor's note: This myth is completely repudiated in an article that appears elsewhere in this issue.]

Although introduced long before the beginning of the war, it is worthwhile discussing here the advantages of asymmetrically positioned national markings. Flying Colors also shows a P.11c of the 113th Esk (Dyon III/Pursuit Brigade) with the starboard checkerboard set well inboard of its usual wing location. The effect in air-to-air combat is to throw off the aim of an attacking pilot because symmetrical national markings are used to help center their aim on the vulnerable middle fuselage/wing center section area. Combat Aircraft of World War Two and other sources (32, 33) show the asymmetrical markings even being offset fore or aft on the wings in an effort to give the visual effect of a different "flight path vector". A fighter pilot pulls "lead" in the direction of flight to get the bullets to the target. If he is confused as to the true direction of the vector, he may very well miss - at least on the first pass. These national insignia were much smaller than before and usually painted in one of the white "boxes" of the original red-and-white checkerboard insignia.

Conclusions

Thus the men of the Lotniczy Wojskowe did everything in their power to prepare for the invader that was sure to come. But no one could have prepared for the awesome onslaught that was about to be unleashed upon them. We have looked closely at the doctrine, disposition and preparations of the L.W. to meet that onslaught. In Part Two, we will more closely examine the combat operations of this Small Air Force which, by the 31st of August, 1939, had only weeks to live.

Douglas C. Dildy (SAFO #844), PSC Box 10162, APO NY 09012.

Footnotes

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5. Ibid, pg 3
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7. Ibid.
8. Cynk, pg 36.
9. Ibid, pg 34
10. _____, "The Elegant Elk", Air International; October, 1988; pg 197.
11. Ibid, pg 217.
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13. Elke C. Weale, John A. Weale, Richard F. Barker, Combat Aircraft of World War Two, Bracken Books, London, 1977, pg 182.
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16. Weale, Weale and Barker, pg 182.
17. Eddy Bauer, Illustrated Encyclopedia of World War II, Cavendish, London, 1981; pg 35.
18. Shores, pg 19
19. Richard M. Watt, Bitter Glory, Simon and Schuster, New York, 1979; pg 419.
20. Shores, pg 19.
21. Ibid, pp 18, 19 and 20.
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 25. James J. Halley, The Role of the Fighter in Air Warfare, Ziff-Davis, New York, 1978, pg 55.
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 28. Watt, pg 414.
 29. Halley, pg 56.
 30. Weale, Weale and Barker, pg 60.
 31. William Green and Gordon Swanborough, Flying Colors, Salamander, London, 1981, pg 34.
 32. Kowalski, pp 7, 8 and 9.
 33. Cynk, pp 37, 40 and 50.

APPENDIX 1

Air Order of Battle -- Dispositional Air Force

	Dyon	Eskadra	Strength	Based at
Pursuit Brigade	III/1	111	10 P.11c	Warsaw-Okecie
	III/1	112	10 P.11c	Warsaw-Okecie
	IV/1	113	10 P.11c	Warsaw-Okecie
	IV/1	114	10 P.11c	Warsaw-Okecie
	III/2	123	10 P.7a	Krakow
Bomber Brigade	X/1	211	9 P.37	Warsaw-Okecie
	X/1	212	9 P.37	Warsaw-Okecie
	XV/1	215	9 P.37	Warsaw-Okecie
	XV/1	216	9 P.37	Warsaw-Okecie
	II/2	21	10 P.23	Krakow
	II/2	22	10 P.23	Krakow
	VI/6	64	10 P.23	Lvov
	VI/6	65	10 P.23	Lvov
	--	55	10 P.23	Lida
Transport Group	--	--	9 Fokker F.VII/3m	
Observation Squadron	--	16	7 Lublin R.XIII	
Liaison Flights	--	--	12 RWD.8	

APPENDIX 2

Air Order of Battle -- Armies Air Forces

Army					
Krakow (2nd Air Reg)	III/2	121	10 P.11c	Igolomie	
	III/2	122	10 P.11c	Igolomie	
	--	23	7 RWD.14	Palczowice	
	--	24	10 P.23	Klimontow	
	--	26	7 R.XIII	Zareleice	
Poznan (3rd Air Reg)	III/3	131	11 P.11c	Dziesznica	
	III/3	132	11 P.11c	Dziesznica	
	--	33	7 R.XIII	Sielec	
	--	34	10 P.23	Mierzewo	
	--	36	7 R.XIII	Gwiazdowo	
Pomorze (4th Air Reg)	III/4	141	11 P.11c	Markowo	
	III/4	142	11 P.11c	Markowo	
	--	42	10 P.23	Zduny	
	--	43	7 R.XIII	Niedzwielz	
	--	46	7 R.XIII	Balice Nowe	
Modlin (Elements of 5th Air Reg from Lida)	III/5	152	10 P.11c	Szpondowo	
	--	53	7 RWD.14	Sokolowek	
	--	41	10 P.23	Zdunowo	
Ind Army Grp Narew (Elements of 5th Air Reg from Lida)	III/5	151	10 P.7a	Zalesie	
	--	51	10 P.23	Wierzbowo	
	--	13	7 RWD.14	---	
Lodz (6th Air Reg from Lvov)	III/6	161	12 P.11c	Widzew	
	III/6	162	10 P.7a	Widzew	
	--	32	10 P.23	Sokolniki	
	--	63	7 RWD.14	Lublinek	
	--	66	7 R.XIII	Lublinek	
Karpaty (Elements of 3rd and 5th Air Regs)	--	31	10 P.23	Werynian	
	--	56	7 R.XIII	Mrowla	

NOTES: 1. Basic AOB is from Combat Aircraft of World War Two by Elke C. Weale, John A. Weale and Richard F. Barker, Bracken Books, London, 1977; page 182.
 2. Strength and Based-at columns confirmed/provided by Duel for the Sky by Christopher Shores, Doubleday & Co, 1985; page 20.

-information wanted-information wanted-information wanted-information wanted-

"I'm working on research projects involving the Imperial Russian Air Service 1909-1917, the Red Air Force 1917-1924, and the Roumanian Air Force 1912-1918. I'd like to hear from anyone who shares an interest in these subjects. Major goal is to chronicle formation dates of squadrons, the types of aircraft used, colors and markings, and what army/naval units the operated with. Also seeking larger scale maps (1:250,000) printed during the periods mentioned, of the fronts on which these air units served. I'm attempting to identify the airfields used by each unit and construct a chronological order of battle is possible for each air service."

Augie Blume (SAFCH #922), Box 190, San Anselmo, CA 94960.

"I have been trying hard to obtain information on aviation in Yugoslavia, and it seems it's one of the most difficult jobs you can imagine. I've been in contact with Herve Roche (SAFCH #762) for two years now, but he has the same problems."

"Does anyone know how to get original or Xerox copies of the following Yugoslavian publications? (1) Givkovitch, Radmio: 1'Aviation Yougoslave, Beograd 1935. (2) L'Annuaire de 1'Aviation Yougoslave, 1935 ff, Beograd. (3) Almanach jugolovenskog vazduhoplovstva, Beograd 1931-32. (4) Sava Mikic: Istorija jugolovenskog vazduhoplovstva, Beograd 1932. (5) Radosavljevic, Milosevic: 55 years of Yugoslav Aviation, 1966. Or, any other publication dealing with Yugoslav aircraft and

aviation."

"I am sorry I have no SAFCH #, but I get SAFO through Midland Counties Publications with a standing order."

Martin Fricke, Rothstrasse 23, 8057 Zurich, SWITZERLAND.

"Will you ask our Latin American specialists to verify or disprove something for me? I have photos from either Popular Aviation or Aero Digest from the '30s and questionable drawings of a 'Vought Corsair V-97 built especially for the Mexican Government for high altitude operation'."

"If this information is authentic, I would like to develop drawing for the SAFO, and build a model of this one. However, according to the information in my library, the only export by Vought in this era was the V-80 they sold to Argentina."

Wayne Denny (SAFCH #422), 5113 Gaviota Ave., Long Beach, CA 90807.

"I wish to contact any members who are interested in the history and current practice of national insignia for military aircraft. I have a fair amount of information, but there are many gaps. I also have an interest in the history and development of the motor vehicle license plate and I am interested in contacting anyone who can provide information on the smaller countries."

John Cochrane (SAFCH #905), 6 Bonnington Ave., Crosby, Liverpool L23 7YJ, ENGLAND.

LOTNICTWO WOJSKOWE



1939

THE SEPTEMBER CAMPAIGN

Introduction

At dawn of 1 September 1939, Germany invaded Poland. The Polish Army equipped with outdated arms and trained in trench warfare was unable to stop the well-trained, well-equipped, and well-organized German Army. The Blitzkrieg on the ground and in the air ended 20 years of Polish independence. On that memorable September day, the dream of a strong, prosperous, and free Poland ended.

The whole nation rose up in defence of Poland. Not only Poles, but many minorities, for whom Poland had become a second home served in the Polish Army. These included Lithuanians, Czechs, Gypsies, Slovaks, Jews, Tartars, Cossaks, and Georgians (the latter coming to Poland after the Russian Revolution). Unfortunately, their adopted country was not able to give them modern weapons and they had to substitute heroism for equipment.

Polish military aviation was divided into two Air Forces: one attached to the Army and the other an Independent Air Force directed by the Commander-in-Chief. This division proved fatal because it diluted the already modest air power. The lack of a unified command, efficient communication, and coordinated action caused unnecessary losses of equipment and personnel. This is why, in the first months of the German occupation, the bitter Polish people sung "And our Eagles were not seen."

The articles that follow are not intended to tell the history of the September Campaign. This has been done many times before. Instead, our purpose is to present information about the Polish Air Force in the late 1930s including rules on the painting and markings of its aircraft. Most of all, we would like to present facts that are often ignored or misinterpreted.

Unfortunately, because of the lack of documentation, it is not possible to answer some questions. However, we are continuing our research and we hope to be able to publish further results in future issues of SAFO. In the meantime, your suggestions and comments would be most welcome.

The authors would like to thank Krzysztof Choloniewski, Walerian Trzcinski, Mirosław Wasielewski, and many other people, too numerous to mention, for their assistance and help in preparing these articles.

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Pronunciation of Polish Names

These articles will be full of Polish names, proper nouns, and surnames. To make things easier for persons not familiar with the Polish language, we present this special key.

a	....	"	....	ou	in	ought
c	....	"	....	ts	in	bits
c, cz	....	"	....	ch	in	child
e	....	"	....	e	in	ever
e	....	"	....	an	in	antidote
g	....	"	....	g	in	gift
h, ch	....	"	....	h	in	help
i	....	"	....	ee	in	feeling
j	....	"	....	y	in	york
l	....	"	....	w	in	would
n	....	"	....	n	in	ing
sz, s	....	"	....	sh	in	should
u, o	....	"	....	oo	in	loose
v	....	"	....	v	in	victory (in middle of a word)
w	....	"	....	f	in	leaf (at end of a word)
y	....	"	....	i	in	sit
rz, z, z, zi	....	"	....	zh	in	zhitomir

NOTE: We have had a problem in finding proper equivalents for some of the Polish letters. For the letters a and e, exact equivalents do not exist in English, but there are perfect equivalents in French; e as in bien or rien and e as in bon ton, bonjour, garçon. Also, z and zi should be said softly, and z and rz hard. (Editor's note: Are you ready for a quiz? Pronounce Lvov.)

Polish Air Force Ranks

POLISH AIR FORCE AND ARMY RANKS AND THEIR RAF EQUIVALENTS

Rank	Abbreviation	Translation	RAF Equivalent
General Broni	gen.broni	General of Army	ACM
General Dywizji	gen.dyw.	General of Division	AM
General Brygady	gen.bryg.	General of Brigade	AVM
Pulkownik	plk.	Colonel	G/C
Podpulkownik	pplk.	Lt. colonel	W/C
Major	mjr.	Major	S/L
Kapitan	kpt.	Captain	F/L
Porucznik	por.	Lieutenant	F/O
Podporucznik	ppor.	2nd Lieutenant	F/O
Chorazy	chor.	Warrant Officer	F/O
Sierżant	st.sierz.	Senior Sergeant	F/S
Sierżant	sierz.	Sergeant	Sgt
Plutonowy	plut.	Platoon Sergeant	Cpl
Kapral	kpr.	Corporal	LAC
Starszy Szeregowy	st.szer.	Senior Private	AC1
Szeregowy	szer.	Private	AC2
Podchorazy	pchor.	Officer Cadet	-

POLISH AIR FORCE TITLES

Bombardier	bombard.	Air Bomber
Mechanik Pokładowy	mech.pokł.	Flight Engineer
Nawigator	nawig.	Navigator
Obserwator	obs.	Observer
Pilot	pil.	Pilot
Radiotelegrafista	rtg.	Wireless Operator
Strzelec (Samolotowy)	strz.(samol.)	Air Gunner

NOTE: Command in the Polish Air Force was a little different than in other air forces: If the crew consisted of more than one person, the aircraft commander was always the observer. However, there were exceptions to this rule.

POLISH AIR FORCE CAMOUFLAGE

1930-1939

This short monograph is an attempt to describe the colors used on Lotnictwo Wojskowe aircraft in the 1930s. Until recently, this subject, as a separate body of information, has not been seriously investigated by Polish aviation historians. During the war and immediately thereafter, emphasis was on trying to find the reasons for the defeat in September 1939, so that colors were of peripheral interest. The 1950s were a period for creating a "new" history that ignored some facts and warped others; the September Campaign and the whole pre-war period in Poland could only be discussed in a political context and only in a negative light. It is not surprising that no worthwhile monographs were written during this time. The situation began to change in the 1960s, but increased interest in aviation in the September Campaign came about as a "side effect" of the interest in plastic modeling in the 1970s. It was at this time that the first noteworthy monographs were written by non-professional historians.

Now that it is "allowed to remember and recollect", useful works on the history of Polish aviation between the wars have begun to appear. This work are not yet coordinated, but there is hope that in the near future most of the heretofore "silent facts" will be reconstructed with a greater approximation of the truth. It is still not possible to specify the exact colors applied to Polish military aircraft, but, in the following paragraphs, I will try to provide SAFO readers with the most accurate record available at the present time. However, it must be remembered that this information is subject to a large margin of error since most of it is based on the most treacherous of sources - the human memory.

Polish Color Schemes

The early 1930s were a time of big changes for the L.W. which were brought about by the creation of a native aviation industry and the subsequent use of aircraft of Polish design and construction. It is natural that, when steps were taken to standardize the markings and colors applied to Polish military aircraft, inspiration was drawn from France. During the late 1920s, many aircraft and much aviation technology was imported from France, and Polish aviation engineers were educated in French schools. All the aircraft imported from France were painted by the manufacturers according to the existing French rules. This was mostly dark green on all surfaces, or, rarely, dark green except for metal panels which were left in their natural color.

In 1926, instruction No. 1078/26 required that all surfaces be painted khaki, which was darker than French dark green, except for the engine covers which were to be left unpainted. Aircraft already painted in French colors were to be left that way until the aircraft went in either for an overhaul or for major repairs. The instruction defined the colors of paints to be used. These color specifications, designed by the WCBL (Wojskowa Centrala Badan Lotniczych or Military Headquarters for Aviation Research) and the KZL (Komitet Zaopatrzenia Lotnictwa or Aviation Munitions Committee), were delivered to the aircraft companies in 1926. Color chips were also provided to the air units.

Studies of the effectiveness of various camouflage schemes appropriate for the climate and terrain typical of Poland probably began at this time. One of the more interesting schemes tested consisted of rectangular patches in light olive, dark olive, khaki, and ochre. However, this scheme was difficult to apply and it was not approved.

The result of these tests was to standardize on two basic color schemes:

I. First Line Aircraft

a) All upper surfaces, the side and lower surface of the fuselage - khaki. Lower surfaces of wings and horizontal stabilizer - light blue/grey (previously light grey).

b) All upper and side surfaces covered with irregular stripes applied symmetric to the longitudinal axis of the aircraft - light olive, dark olive, and khaki. All lower surfaces - silver, or, rarely - light blue/grey (previously light grey).

II. Second Line Aircraft (ambulance, trainers, etc.)

- a) All surfaces khaki
- b) All surfaces silver
- c) All surfaces cream

There were some departures from this regulation. About the mid-1930s, some aircraft appear in scheme I-a but with the lower surface of the fuselage painted light blue/grey. Representatives of this style were the RWD-14 and PZL-37. At the present time, it is impossible to say what caused these changes.

The main producers for paint for the military were "Avia" and "Nobiles", but it was the former that specialized in paints for aviation. Aircraft for civil use were painted with paints produced by other manufacturers such as "Mierzkowski i Ska".

The instructions for painting is reprinted in "Godlo i barwa w lotnictwie polskim 1918-1939" by T.J. Kowalski, Wkll, Warszawa 1981. Metal and wooden (plywood) parts - 2 or 3 coats of "Nobiles" paint depending on if the base is veneer. Fabric covered parts - "Avia" paints - 2 coats of colorless dope, one coat of colored dope, and a final coat of colorless dope; 4 layers in all.

The discussions could end here if it were not for the fact that, in practice, the colors did not agree with the regulations; paints produced by the different companies differed in shade. This is especially true of the color described as "khaki". Since an extensive range of hues went under this common name, "khaki" must be considered as the name of the paint only, and not as a specific color.

Panstwowe Zaklady Lotnicze

I will begin the discussion of the color "khaki" by looking at the paints used on aircraft manufactured by PZL (Panstwowe Zaklady Lotnicze or State Aviation Works). Accurate information is available about these paints because, during the restoration work on the PZL P-11c preserved in Poland, observations were made of the various layers of paint applied to this aircraft. The top few layers were the

paints used during renovation of the aircraft done at the Cracow museum; these were mostly dark olive and dark green. The next layer was RLM-02 Grau, the color used on the airplane during its service with the Luftwaffe. This was followed by the paints used in pre-war Poland. At first, "khaki" was matched to FS20118 and FS20099/20118, and "light blue/grey" was matched to FS26329. (Reference: "Skrzydlatą Polską" 39/87.)

Unfortunately, it soon became clear that these paint samples had been altered by exposure and overpainting. It was not until the airplane had been disassembled that it was possible to find well-preserved fragments of paint on the joints between the metal plates. Although these paint samples have probably been changed somewhat by aging, they should be less altered than the samples recovered earlier. The "khaki" of these samples matches FS30108/20122 and the "light blue/grey" matches FS35526. These are now considered to be the best match for the original pre-1939 color used on aircraft manufactured by PZL.

Another discovery was made at this time. Removing the paint from the lower surface of the wings revealed that a coat of "Khaki" below the light blue/grey. Apparently, after assembly, PZL had painted the aircraft "khaki" overall before adding light blue/grey to the lower surfaces.

Probably all PZL aircraft produced before 1935-36 were painted in the colors described above. This includes the P-7, P-11a, P-11c, PZL-23A, and PZL-23B. The PZL-37 will be discussed later. Beside producing aircraft for the Polish military, PZL also engaged in production for foreign customers; however, the colors of the export aircraft are omitted from this discussion because of the lack of information and because this subject is outside the scope of the present article.

Plage & Laskiewicz

Unfortunately, when discussing the paints used by other Polish manufacturers, we do not have the advantage of examining a preserved example. Therefore, all that is known is based on the recollections of witnesses and on conjecture.

It is very probable that the paints used by Plage & Laskiewicz in Lublin were very similar to (or even the same) as those used by PZL. The old photos and the witness attest to this. In the period 1920-1936, Plage & Laskiewicz produced mainly Potez XXV, Lublin R-VIIIa, Lublin R-X, and Lublin R-XIII. The first three of these do not require further discussion because they were all painted the same as the PZL aircraft.

The Lublin R-XIII carried, from the beginning, a color scheme that was unique to this type of aircraft. This scheme, using "Nobiles" paints and in full accordance with scheme I-b mentioned above, consisted of irregular stripes located symmetrical to the longitudinal axis of the airplane. According to the original documents of "P & L" (Zespół akt Plage & Laskiewicz or "Group A of P & L records), these colors were "khaki", "light olive", and "dark olive". When newly applied, these paints had a distinctly glossy appearance, but they quickly weathered to a semigloss. The lower surfaces were painted with a mixture of aluminum powder and clear varnish (possibly "Avia" dope). Because of the use of arbitrary proportions of powder and varnish, it is not possible to state the exact shade of the under-surface color. There are also reports of Lublin R-XIII with light blue/grey lower

surfaces. but there are no reliable confirmation of these statements.

The upper surface colors of the Lublin R-XIII needs further discussion because the color names are not in accordance with the actual colors. First of all, the color marked "khaki" was in fact a dark olive (sometimes described as a light auburn). "Dark olive" was a dark green, but some witnesses described it as "fresh dark green". "Light olive" was probably ochre. The above conclusions are based on the recollections of witnesses, so the names of the colors may differ from those used originally. It is interesting to note that "khaki" is similar to that used by PZL. Was it the same paint?

The color scheme used on the R-XIII was very practical since the Lublins usually operated at low altitude and were often stationed on unprepared landing fields. This is why the Lublin R-XIII received the nickname "Grasshopper".

Podlaska Wytwornia Samolotow

For PWS (Podlaska Wytwornia Samolotow or Podlaskan Airplane Plant) in Biala Podlaska, the period 1930-36 was a time of producing first fighter aircraft and, later, school and training types for the Air Force. These were the PWS-10, -14, -16, -16bis, -18, -26, and RWD-8pws. Most of these aircraft wore the scheme referred to as II-a, but other were finished in the II-b scheme. Among these latter were an unknown number of PWS-26. Witnesses affirm that PZL and PWS aircraft produced in this time period were painted in the same "khaki" color. If this is true, how can we account for reports that the RWD-8pws were painted in a color more brownish than any PZL aircraft? Did PWS make an exception of their RWD-8 and buy "khaki" paint of a different shade for them? We are free to speculate here because there is no confirmation nor contradictions for our suppositions. We may learn more about the colors of the PWS-26 when restoration begins on the PWS-26 exhibited at the Polish Aviation Museum in Cracow (PWS-26, white "5", ex SP-AJB, ex 81.123).

Wielkopolska Wytwornia Samolotow

In the period 1930-36, WWS "Samolot" (Wielkopolska Wytwornia Samolotow or Wielkopolsan Airplane Plant) in Poznan produced several training aircraft from eng. R. Bartel's design office. Among these were the Bartel BM-4 and BM-5. The color scheme most often used on these aircraft was scheme II-a and maybe II-b, but in the French style with the metal parts covered with a clear dope. According to witnesses, all Bartel aircraft painted in scheme II-a had a color considerably different from the other types of aircraft that carried this same scheme. The "khaki" used was a dark brown with no green or olive shade. In fact, this color was so distinctive that it was possible to identify a Bartel aircraft from a great distance by noting only its color.

After the liquidation of WWS "Samolot" in the summer of 1930, the production of Bartel types was moved to PWS. According to all available information, aircraft of the Bartel family, the BM-4h at that time, were still painted in the manner described above. Although this seems unlikely, it is hard to argue with the witnesses.

Lubelska Wytwornia Samolotow

The first Potez XXVB2 with a radial PZL

Bristol Jupiter VII engine appeared in 1936. This conversion was worked out by LWS (Lubelska Wytownia Samolotow or Lublin Airplane Plant) because of the difficulty in obtaining the original Lorraine-Dietrich engines. An unknown number of these Potez aircraft received a color scheme that is probably a derivative of scheme II-b with the exception that the colors were not applied symmetrical to the longitudinal axis of the aircraft. Unfortunately, it is not known if silver or light blue/grey was used on the undersurfaces.

Polish Khaki

In 1936, a new color scheme appeared. According to two independent witnesses and the analysis of photos, the new scheme was used only on new aircraft types and a number of prototypes (e.g. PZL-37 Los, RWD(LWS)-14 Czapla, LWS-3 Mewa, PZL-46 Sum, and PZL-38 Wilk). It was not used on PZL-23, P-11, or PWS aircraft, nor was it used on these aircraft when they were repainted during overhaul or major repairs (which were frequently performed in the factory where the aircraft was produced).

In contrast to old "khaki" which had a distinctly brownish tone, the new paint was more greenish and also more glossy. According to Mr. W. Trzcinski, there is no exact match in FS 595a, but the new color was as dark as FS 341512 with a shade somewhere between FS34226 and FS34258. When Mr. Trzcinski was shown the color samples recovered from the Museum's P-11c, he emphatically declared that the new "khaki" was different.

It is not possible to determine why the

old "khaki" was changed. Perhaps, it was a WCBL disposition that has not been preserved, or perhaps, as gossip has it, "Nobiles" had problems importing the pigment that served as the bases for the old "khaki" and another "khaki" had to worked out with a shade and degree of gloss different from the original paint.

The color on the lower surface of the new aircraft was also change; although the official name remained unchanged as light blue/grey. According to Mr. Trzcinski's recollection, this new undersurface color was semigloss FS15526/25550.

Nothing discussed above excludes the possibility that civil aircraft mobilized in August and September 1939 might have received camouflage schemes completely different from those described above. Because of the poor documentation of these aircraft, it is impossible to say what paints were used. This same statement holds true for aircraft built for export or being tested when the war broke out that were assigned to the air units. In this class are the PZL-43 and P-11g Kobuz.

(Author's note: In writing this monograph, I have included only color schemes that have been documented and all conclusion are based on the best available information. When new information becomes available, these conclusions will be changes and/or expanded. The important thing is the advancement of our knowledge of the subject.)

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INSIGNIA & MARKINGS

During the twenty years between 1918 and 1939, the Polish national insignia underwent very little change. Most changes occurred during the first few years, and by 1923, the chessboard had reached its mature form. However, it was not until 1930 that the chessboard was officially approved as the insignia for Polish military aircraft. The legal act that codified the insignia appeared in Dziennik Ustaw RP, Nr.17 (Law Gazette of the Republic of Poland No. 17) of 13 March 1930, position 129, paragraph 1, section 2:

"The chessboard is to be a square divided into four equal squares where the left/upper and right/lower are in red with a white outline and left/lower and right/upper are in white with a red outline. The proportion between the outline and the square is to be 1:5"

The above document went on to require that the insignia be placed symmetrically on the wings in a size to be determined by the Minister of Military Affairs for each type of aircraft separately. It is interesting to note that the proportion between the lengths of the chessboard's single square and the width of the outline actually used was other than 1:5 for the insignia painted on the wings - in fact it was closer 1:8.

The first criticism of the symmetrically-placed chessboards appeared in 1930. It was argued that the insignia should be painted asymmetrically and they should be reduced in

size. In fact, the white squares in the insignia of that time covered a significant width of the wing; this made the aircraft visible for miles. Therefore, in 1932, it was ordered that the insignia on the upper surface of the wings be changes to the proportion 1:5 and that their size be reduced as specified for each type of combat aircraft. (See Table 1.)

TABLE I
Dimensions of National Insignia used on Polish Aircraft
used during the September Campaign

Type	Rudder	Upper Surface of Wing		Lower Surface	Service Date
		pre-1932	post-1932		
PWS-10	45 cm	120 cm	45 cm	120 cm	
PZL P-7	45	-	55	120	1932
PZL P-11	45	-	55	120	1934
PZL P-37	45	-	65	120	1938
PZL-23	45	-	65	120	1936
LWS-4	45	-	50	120	1936
RWD-14	45	-	50	120	1938
LWS-3	45	-	50	120	1939
Lublin					
R-XIIIA	45	160	45	160	
R-XIIIB-F	45	-	45	160	
R-XIV	45	160	-	160	
RWD-8	45	-	120	120	1933
PWS-16	45	-	120	120	1933
PWS-18	45	-	120	120	1936
PWS-26	45	-	120	120	1937
Potez XXV	60	180	50	180	
Fokker					
F-VII/3M	60	180	180	180	

Note: The table covers only aircraft that saw combat service during the September Campaign.

All Polish aircraft received this "new" insignia at the turn of 1932-1933, but in practice they were not always in full accordance with the instructions. The greatest discrepancy appeared in the positioning of the chessboards on the upper surfaces of the starboard wing.

The size of the chessboard on the lower surfaces of the wing was not changed and the proportion between the inner square and the outline remained 1:8.

Chessboards without White

A "new" type of underwing insignia appeared on some aircraft (P-7, P-11 and PZL-23) produced between 1933 and 1937. Contrary to the regulations, the insignia on the lower surfaces of the wing was completely devoid of white. In the places where white should have been was the color used on the lower surface of the wing - a light-blue grey. The chessboard was separated from the background by a thin red line, which, with the red outline, formed the complete square.

This, then, was the ultimate form of the national insignia carried by the aircraft of the Lotnictwo Wojskowe at the outbreak of the war.

Overpainting Markings

Less information is known about the overpainting of markings during the war. This overpainting was applied to the chessboards on the upper surfaces of the wings, to the unit badges, and to the tactical numbers. (Note: These comments refer only to the fighters; examples of overpainting the markings on other types of aircraft are not known.)

It is difficult to unequivocally determine when these changes were made. Much evidence points to 7 September 1939, after the regrouping of fighter aircraft in the Lublin area under the central command of the Brygada Poscigowa (Pursuit Brigade). In this situation, maintaining tactical numbers and unit badges made no sense. The overpainting of unit badges and tactical numbers is mentioned by plk.pil. Stanislaw Skalski in his book "Czarne krzyze nad Polska" ("Black Crosses over Poland") MON, Warsaw 1975, page 149.

The use of the word "overpainting" is inadequate to describe what happened to the chessboards on the upper surfaces of the wings. On some photos, these look to have been removed mechanically by scratching or wiping off the white areas. It effect seem on these photos was certainly not caused by overpainting.

Miscellaneous Markings

The colors of the other markings applied to Polish military aircraft are of interest here. Among these markings are the weights, producer's signs, designation of aircraft type, and evidence numbers.

The weights of the aircraft were marked on the rudder in either red or black, but sometimes in silver. In the beginning, the they were marked on both sides of the rudder, although it is very possible that later they were only painted on the port side. The manufacturer had great freedom in how he painted this information, as can be deduced from the fact that there is no specific type of aircraft or specific period of time when a particular color was used. The study of available photos reveals that these markings were not always carried. For example, on the older types (e.g. PWS-10) the weights were more often marked than they were on more modern types (P-7 and P-11 almost never carried these markings). It is difficult to say why this happened. Perhaps these miniature inscriptions, the height of the numbers was only 5 cm, wore off easily and were not replaced when the

aircraft was repaired. It is also possible that their use was discontinued.

Taking a practice from the French manufacturers, Polish aircraft were marked with the producer's sign and a designation of the type. The information about the type of aircraft was always located on both side of the fin or rudder very near the top. The producer's sign was located on both sides of the fin.

Evidence Numbers

Evidence numbers, military registration numbers, were initially painted on both sides of rear part of the fuselage, usually in red or white. However, after 1931, first-line aircraft probably carried these markings only on the port side, and only in red. It is certain that the Pulawski fighters (which began to enter service in 1931), some PZL-23, and all PZL-37 had these numbers on only the port side. It is also quite likely that at the beginning of the war some of the older machines (particularly those that were used for training and school purposes) could have still had the evidence number on both sides of the fuselage. During the latter half of the 1930s, the first black evidence numbers appeared. Unfortunately, it is impossible to determine which aircraft carried black evidence numbers.

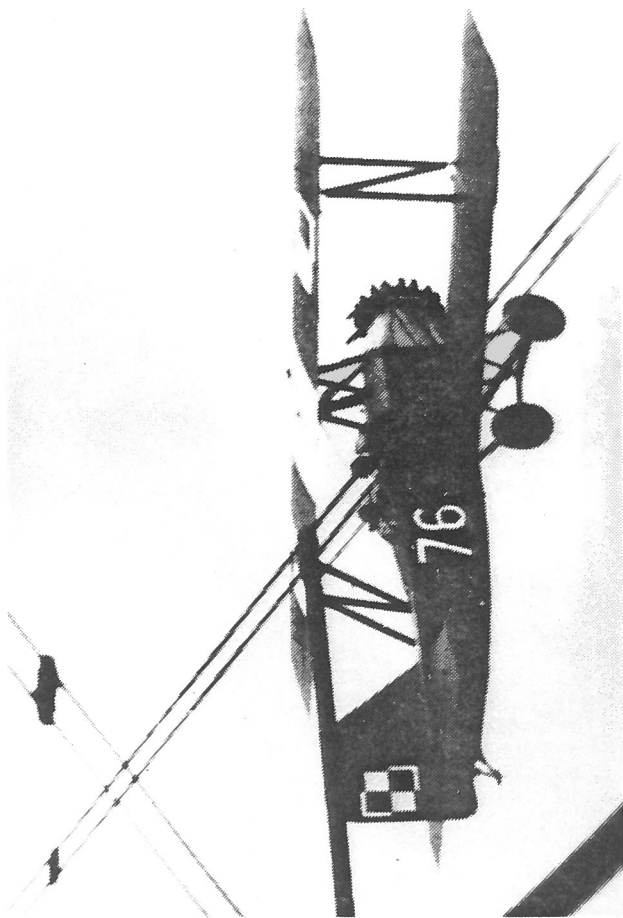
Evidence numbers, the producer's sign, the type designation, and the weights were usually painted in the same color - red, white, or black. However, the machines flown by commanders (flight commanders, their deputies, V-formation commanders, etc.) were frequently exceptions. For example, some P-7 of the 121 and 123 Fighter Flights carried white evidence numbers (6.17, 6.110) while the other markings were in red.

Markings on Training Aircraft

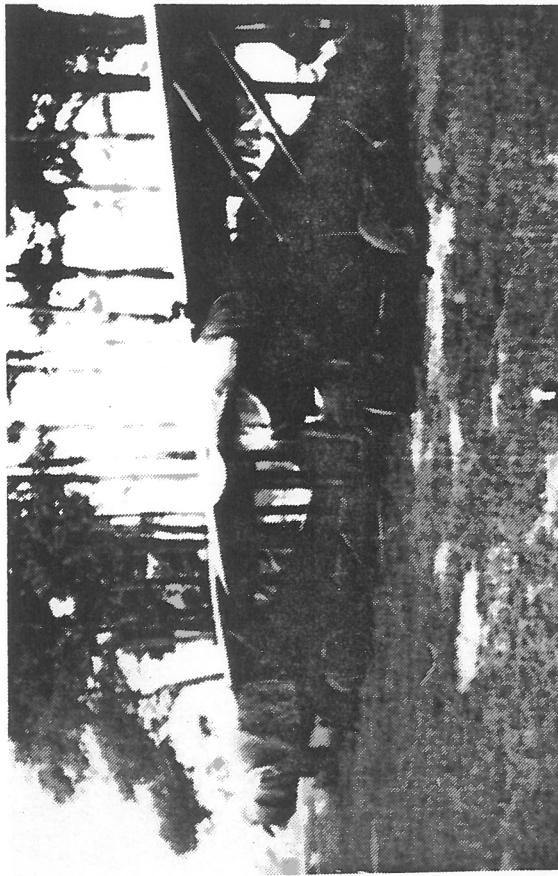
There is no information on the colors of the markings used on the PWS-10, Potez XXV, LWS-4 (and -6) and other aircraft used by the training and school centers, but it is to be expected that the rules of painting and markings aircraft in such units were not restrictive. In this case, it is necessary to examine photos of the individual machines. Most apparent, were that the instructions regarding the asymmetric placement of the chessboard on the upper surface of the wings was not followed in the training units. Therefore, by looking at the upper surface of the wing, one can determine if it was a training machine or a machine from a first-line unit. Almost all Type-I training machines (RWD-8) and Type-II (PWS-16, -18, -26) carried large, symmetrically positioned national insignia. Aircraft of Type-III, such as PWS-10, Potez XXV, PZL P-7, and P-11 that had been removed from first-line service, carried chessboards on the upper surface of the wings that were in accordance with the instructions. Some rules seem to apply to the type designations: these were mostly painted in white on training machines camouflaged in khaki, and in black on silver-painted aircraft. However, many PWS-26 operating in khaki had black or red designation markings.

Black Markings

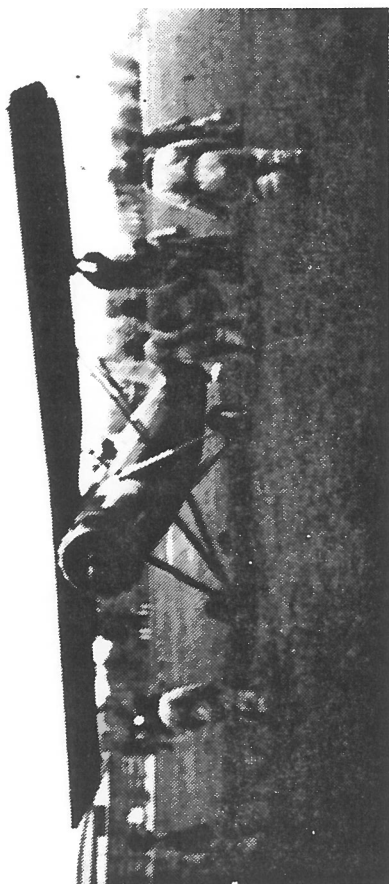
Some difficult-to-perceive rules of painting markings may have applied to the PZL P-7, P-11, PZL-23, and LWS aircraft. The "Sevens" had mostly all the designations in red. (The preserved photos were sometimes made



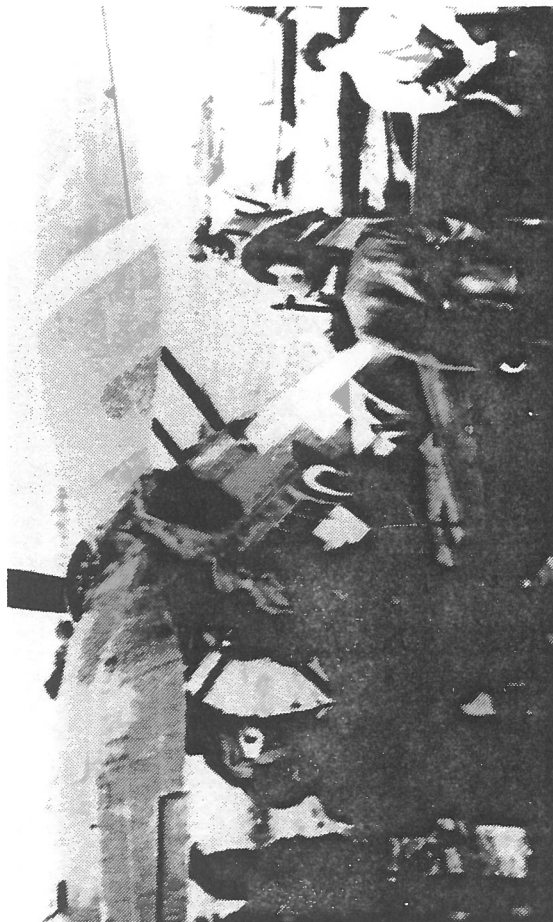
F



H



E



G

Photo captions on page 66.

on orthochromatic film which helps to identify the colors.) It is possible that the P-7 received black markings during general repairs and that the producer's sign was not repainted when the machine was repainted. In substance, these same things can be said about the P-11a and P-11c.

Black markings, as a massive event, began to appear on the P-11c, but it is impossible to determine under what rules some P-11c received black marking and some red markings.

It is interesting to speculate that the color of the markings was connect with the squadrons: e.g. 113 Fighter Flight - black; 142 Fighter Flight - black; 131 Fighter Flight - red; 161 Fighter Flight - red. (Note: the color of the latter two flights are conjectural.) If this theory contains the seeds of truth, then it possible that the aircraft were delivered to the units in production blocks. If not, we may be dealing with a completely casual and undesigned activity.

It is absolutely inexplicable why the small letter "c" in the designation P-11c was sometimes located in the upper part of the inscription and sometimes in the lower part. The color of the inscription plays no role here. Ppor.pil. Hieronim Dudwal's "Eleven" of 113 Fighter Flight carried the designation in black, while ppor.pil. J. Dzwonek's "Eleven" of 161 Fighter Flight had a red designation, but both had the "c" located in the upper part of the inscription.

A third theory concerning the black markings is connected with the machines produced shortly before the war, such as the PZL-37 Los. A small number of photo exists of the Los during its operational service, and it is clear that the evidence numbers, producer's sign, and type designation (there were no weights) are all in black on these aircraft. It is possible that beginning in 1936 (or 1937) all PZL aircraft received black markings.

Markings on LWS Aircraft

Aircraft from LWS have to be discussed separately since they received markings different from those applied to the products of PZL, RWD, and PWS. The only LWS machines that saw combat were the LWS/RWD-14 "Czapla" ("Heron") and the LWS-3 "Mewa" ("Seagull"). The LWS machines did not carry evidence numbers, type designation, or weights. [The twelve LWS-4 "Zubr" ("Bison") were allocated numbers 71.2 to 71.17, but probably none ever carried these numbers. The "Bisons" did not even carry the producer's sign.] The other LWS products, the

"Czapla" and the "Mewa" are less well represented by photos, but it is confirmed that they carried only the produce's sign painted in white.

Tactical Numbers

One of the most visible elements of Polish aircraft markings was the letter/numbers painted on the lower surfaces of the wings. The individual aircraft number was carried under the starboard wing and a single letter designating the tactical unit was carried under the port wing. This is often incorrectly referred to as a "call sign" or "radio call sign". When asked about this, pilot who fought in the September Campaign say that they were never instructed to use these "call signs" on the radio. Instead, they were told to use the names of their comrades, or the cryptonym of the command post. At the end of the 1920s, the tactical codes were painted in white and were probably patterned after the French system of "Matricule Militaire". In the early 1930s, aircraft in camouflage of khaki and light blue-grey received tactical codes in black. The only exceptions were some machines belonging to the 1st and 3rd Air Regiments where numerous machines carried white codes.

Author's note: The above description of the rules and regulations for coloring and locating the national insignia and the markings is very fragmentary and incomplete. A special instruction regarding the protection of military secrets, issued in 1937, stated that L.W. aircraft were not to be photographed and that cases of illegal photography were to be treated as espionage. A number of photos were taken during mobilization and after the outbreak of the war. However, only a modest quantity of these photos have been preserved and many of these are of poor quality. The original orders and specifications have been lost. Some were lost during September, either on purpose or by accident. Others were evacuated to Romania (and Hungary) and have since been lost. Some archives probably fell into German hands and some into the hands of unauthorized persons. All these circumstances create a situation in which it is impossible to answer many important questions. This matter is further complicated that, in the area of aircraft markings, the rule is that "Practice does not all follow instructions."

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(continued from page 70)

MiG-21MF); current Spanish AF trainers with 16 photos. Issue #2: Current Portuguese AF with 12 photos; second part of RAAF Hornet story with 8 photos; a lot of French AF in this issue. Issue #3: Austrian Flying School with 6 photos (Safir & PC-7); Swiss AF with 12 photos; TAM 88 - major NATO exercise with many photos. Issue #4: Pakistan AF with 35 color photos many showing superb close-ups of Chinese MiGs and Fantans (many are half-page and there are 2 full-page ones of Shenyang F-6's); Portuguese maritime patrol with 3 photos; 13 photos including close-ups of the MiG-29's at Farnborough. Issue #5: Second part of the Pakistan AF feature with another 17 color photos; the two CAP-230's of the Moroccan AF display team with 5 photos; Swiss AF in training with 12 photos.

"I presume that many of the members are aware of Air-Britain. They publish much material such as current and historical civil registers and historical RAF serial listings, but recently they have published two monographs which have considerable SAFO interest. The first is on the Dornier Do-27 and gives details of every aircraft built. There are many photos (b&w only) of the aircraft in various air force markings including considerable detail of its German service plus, of course, many photos of the aircraft in civilian markings. This book costs £7.50 to non-members of Air-Britain including surface mail worldwide from: Air-Britain Sales Dept., 41 Penshurst Rd., Leigh, Tonbridge, Kent TN11 8HL, England.

(continued on page 91)

THE EVIDENCE OF THE PHOTOGRAPHS

During the forty years that have past since the end of WWII, many misunderstandings concerning the camouflage and markings of Polish aircraft used during the September Campaign have appeared in books and articles. Most of these mistakes are the result of improper interpretation of black and white photos. In this article, we will take a closer look at the evidence of the photos.

One of the most famous and spectacular of these myths tells about a Czech Avia B.534s taking part in the Campaign with Polish markings. This myth began with a German propaganda film, "Kampfgeschwader Lutzoff" in which a B.534 is shown in Polish markings and wearing a mythical unit badge. While this story is now fully discredited, German propaganda photos can still throw historians into confusion. For example, in many serious publications, one can find information and drawings of PZL a P-11c in a two-color upper surface camouflage. Some authors say the colors were light olive and dark green, others say sand and olive green. It doesn't matter, the PAF never used this camouflage scheme. The misunderstanding arose from four b/w photos showing P-11c white "3" (probably an aircraft from 114 Flight) wearing a German-type two-color camouflage. In reality, this camouflage had been applied by the Germans for propaganda purposes and probably was used on this one aircraft only. We will probably never know the colors used on this machine, but the possibilities are: a combination of two German colors from among RLM 70, 71, 02, or one of these three colors applied over the Polish khaki. The latter seems most likely as the "white 3" on the fuselage is in the Polish style and was probably not repainted.

Another spectacular mistake, repeated by many authors (see *Plany Modelarskie* #91, TBU #22, and *Profile Publications* #75), is the light blue-grey lower surface on the fuselage of PZL P-11c white "2" of 114 Flight. The study of a good-quality photo of this aircraft makes it immediately clear that the fuselage of white "2" was overall khaki, a color scheme that was common to all Polish fighters in 1939. The "unique" scheme is nothing more than the misinterpretation of sunlight reflecting from the lower portion of the fuselage.

Only brief comments need be made about numerous cases where authors purposely misinformed the readers. An example can be found in TBU #3 where there is shown a three-color camouflaged P-24 in the "colors of the Polish Air Force". It is well known that the P-24 never served with the *Lotnictwo Wojskowe*.

Winged Ermine & Turkeys

While talking about the difficulties of interpreting b/w photos, I would like to present my views about the mystery that surrounds the badges of 161 and 162 Flights with III/6 Squadron of the 6th Air Regiment at Lwow. There are two photos that show P-11c with a "winged ermine" unit badge. The problem arises because this badge, according to all historians, was the badge of 162 Flight, which was entirely equipped with P-7a aircraft and never used the P-11c. These photos have put historians into real confusion. In the book *"Samoloty myśliwskie wrzesnia 1939"* the caption

of photo 4.46 on page 62 reads "P-11c number 9 of 162 Flight". In his very good book *"Polskie eskadry w wojnie obronnej 1939"* J. Pawlak, on page 94, has a photo captioned "P-7a of 162 Flight at Basiowka airfield" although the aircraft referred to is definitely a P-11c. (Incidentally, in the same book on page 85 the caption identifies an aircraft as a P-11c of 152 Flight when the aircraft shown is actually a P-7a of 151 Flight.)

To further complicate the issue, Mr. Jan Dzwonek-Jasinski, an ex-pilot of 161 Flight, said, in an interview with Mr. K. Choloniewski, that he flew a P-11c that had the "ermine" badge on one side and a "turkey" badge on the other side. (Jasinski is Mr. Dzwonek's alias. He had to go into hiding during the 1940s and 1950s since he was wanted by the NKVD for shooting down a Russian fighter that was protecting a bomber formation on its way to bomb Czechoslovakia in March 1939.)

How can we reconcile these two accounts that seem to be so contradictory? After interviewing Mr. Czeslaw Glowczynski, an ex-pilot of 162 Flight, I think I can provide the answer.

Although the III/6 Squadron operated P-7a, it is known that the commanding officer, mjr.pil. Stanislaw Morawski, operated a P-11c. This aircraft could have had the emblems of 161 and 162 Flights painted on opposite sides of its fuselage. III/1 Squadron used this system to mark its commander's aircraft. Since Mr. Glowczynski was one of the better pilots in the Squadron, when, after the outbreak of the war, mjr.pil. Morawski became overburdened with the duties of command, Mr. Glowczynski was assigned to fly mjr.pil. Morawski's P-11c. Mr. Glowczynski is quite certain that this P-11c had "ermine" on both sides of the fuselage and that one had wings shaded in blue while the other had wings shaded in dark pink or light red. According to him, the "winged ermine" was the badge of both 161 and 162 Flights and the differentiating element was the color of the wings. [Since the badges of 151 & 152, 141 & 142, 131 & 132 Flights were also differentiated only by the color of the bird's (condor's, duck's, or raven's) wings, this report sounds very likely.] After so many years, Mr. Glowczynski is unable to say which color belonged to which unit, but his account explains why a P-11c would be carrying the "ermine" badge.

Examination of b/w photos belonging to Mr. Glowczynski, which are direct prints of original negatives and not reproductions nor retouched photos, provides further proof of the above assumptions. These photos have been reproduced many times in various publication, but the reproductions were very poor and the printing was even worse, so details could not be seen. A photo of Mr. Glowczynski standing besides "his" aircraft clearly shows the shading on the ermine's wings. A photo of P-11c "9" shows this even more clearly - almost the entire wings are colored, only a narrow stripe at the top remains white. The shade of the ermine's wings on "9" is distinctly darker than the shading of the wings on the other aircraft. Moreover, the "ermine" differ from each other in shape. Could this be another differentiating element? No one knows, but I doubt it.

Continuing the analysis of the photos, I

can attempt to determine which color corresponded to which unit. On both photos, the red of the chessboards is indistinguishable from the khaki camouflage. When photos are taken without special filters or special film, reds, green, and brown (and so khaki too) can not be distinguished on b/w photos. Also, blue and white are indistinguishable on b/w prints unless a red filter is used. On white "9", the color of the wings on the badge is hardly visible against the khaki, so we can risk a guess that the wings are red. On the other hand, looking at a very good print of the other aircraft we see that the wings of the "ermine" are not entirely white, so the shade could be blue in this case. It appears that the badge of 161 Flight - to which white "9" undoubtedly belonged - was a "ermine" with pink or red wings, while the wings on the "ermine" of 162 Flight were blue. This conclusion, although highly probable, may not be the final word since it was based on an oral account of the pilots and an analysis of b/w photos.

Another puzzle regarding maj.pil Morawski's P-11c is the color of the diagonal stripe on the fuselage. According to Mr. Dzwonek, this stripe was white, but Mr. Glowczynski remembers it as being white and red. On a photo, we can see only the white, but this does not exclude the existence of red which would be invisible against the khaki. Finishing the subject of this P-11c, I must add that Mr. Glowczynski reported that the aircraft had red wing tips on both upper and lower surfaces and probably did not carry any underwing codes. Furthermore, he reports that the underwing chessboards were rotated 90 degrees by exchanging the white and red colors. The military evidence number on the port side is unknown. On one photo, the imprint of a right hand is visible near the venturi tube. Most probably it was left by a mechanic who touched the aircraft with his greasy hand.

Let us come back to ppor.pil. Dzwonek's aircraft "4". Since all existing photos show the starboard side of this machine, nothing can be said about the port side. According to Mr. Dzwonek's account to Mr. Choloniewski, this machine had a "turkey" on one side and an "ermine" on the other, but there is no photographic evidence to support this arrangement. Another problem with this aircraft is the color of the stripes on the upper surfaces of the wing. We know that, in the spring of 1939, Mr. Dzwonek was a member of a fighter team that was assigned to the KOP (Korpus Ochrony Pogranicza or Border Defense Corps). Aircraft belonging to this team did not carry the badges of their home units, but they did carry the letters "KOP" on the fin and either a white lightning stripe or chevron on the upper surface of the wing. For example, aircraft "10" (shown in the Profile with a turkey emblem, which is not supported by any photographic or oral accounts) had a lightning stripe on the wing, while aircraft "6" had a chevron. Photos of Mr. Dzwonek's "4" show a chevron on the wing that is darker than the khaki camouflage. It is also darker than the red of the chessboard. In addition, there is a dark stain on the fin that is the same shade as the chevron. This leads to the logical conclusion that, after withdrawal of the machine from the KOP, the white chevron on the wing, as well as the "KOP" lettering on the vertical stabilizer, were overpainted with fresh khaki. Therefore, in September 1939, this aircraft carried neither the "KOP" letters nor the white stripes.

A drawing of this aircraft, with white

lightning and a "turkey" on the port side, is shown on the cover of the book "Samoloty Mysliwskie ...". This is pure fiction. So are the dark letters "KOP" visible on the fin in a photo of an aircraft in the same book - these letters are the obvious result of retouching.

Mr. T. Kowalski, in his book "Godło i barwa w lotnictwie polskim 1918-1930", suggests that the chevron on the wing was red. This can not be correct because the red color of the insignia is indistinguishable from the khaki on the photo. Moreover, Mr. Dzwonek was only a ordinary pilot and he was not in charge of any function that would have required his aircraft to be specially marked.

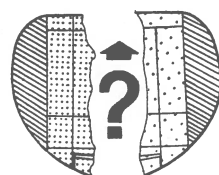
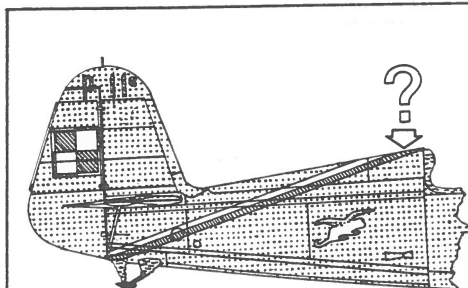
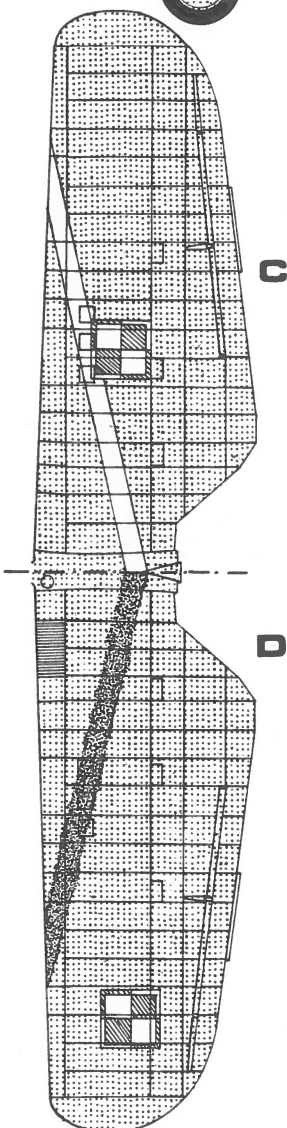
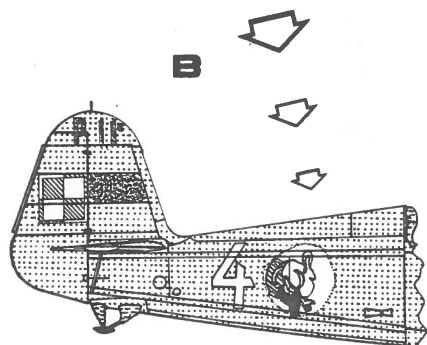
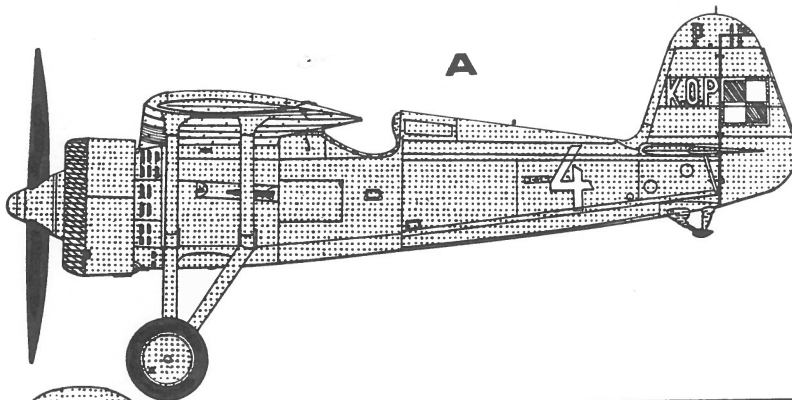
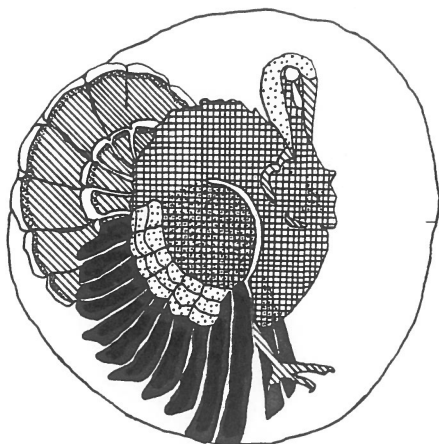
As for the "turkey" emblem, it was not the badge of 161 as it has been suggested by many authors. According to Mr. Dzwonek-Jasinski, the "turkey" was a proposal for a new 161 badge, but it was not approved by the flight and squadron commanders. This account would explain why an unofficial badge would have appeared on a Polish aircraft, since personal badges were never carried on L.W. aircraft. Further evidence that this emblem was a proposed unit badge is provided by the fact that all units of the 6th Air Regiment in Lwow had their badges on a white, circular background. The "turkey" emblem was in accord with this rule. Most probably, the emblem appeared only on the starboard side of white "4". It is hard to say when the "turkey" first appeared, but it was somewhere between May and 1 September, i.e. after the aircraft was released from the KOP but before the outbreak of the war. I must add that the "turkey" was hand painted and its background was not a perfect circle.

To finish with the subject of III/6 Squadron, I must mention an interesting, rather unique and not well-known marking on por.pil. T. Jeziorowski's P-11c. Por.pil. Jeziorowski was the Squadron's tactical-operations officer, but he usually flew with 161 Flight. His P-11c carried on the upper surface of the wing six white stripes the width of which were most probably equal to the width of one section of grooved plate (i.e. 260 mm). This aircraft had no underwing number and the underwing chessboards were white and red.

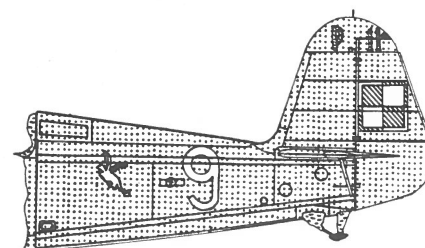
Section Numbers

Before ending this article, I would like to mention another mysterious matter, this time concerning the Fighter Squadrons of the 1st Air Regiment at Warsaw. Some fighters of this regiment had their wheel covers painted a light color. These are seen on photos of P-11a #1 (the Flight commander) and #6 among others of 114 Flight, and #2 (Deputy Flight commander) and at least one more of 113 Flight. The numbers applied to the P-11a with light wheel covers prove that this was not a marking for Flight or Section commanders or their deputies. Mr. B. Dabrowski, an ex-114 pilot, suggests that aircraft of different sections (V-formations) were marked this way, but he did not recall the colors. On the other hand, some aircraft - which had to belong to one of the above sections - have dark wheel covers. Were they khaki? If so, Mr. Dabrowski's version would prove incorrect. Or was a dark color used to denote other sections?

It is very difficult to find answers to many questions such as these. Many of the pilots you served in the September Campaign are dead and those who are still alive do not remember all the details after 50 years. If I get more information on any of these subjects, I promise to keep SAFO readers informed.



E



F



1



2



3



4



5



6



7



8



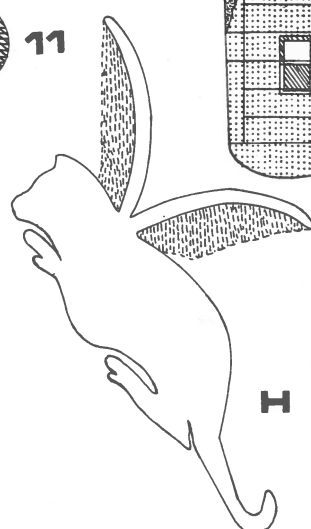
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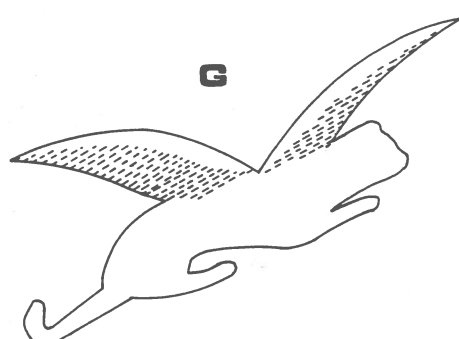
10



11



H



G

pkm 87

Figs. A & C. The P-11c flown by ppor.pil. Dzwonek as it appeared during its service with the KOP. White "KOP" on the fin and white chevron on the upper surfaces of the wing. The starboard half of the wing is shown.

Figs. B & D. The same aircraft as it appeared in late summer of 1939 with the "KOP" letters and chevron overpainted with fresh paint and with the "turkey" badge on the starboard side. The port half of the wing is shown.

Fig. E. The P-11c flown by ppor.pil. Glowczynski with white (or red/white) diagonal stripe on the fuselage and red wing tips. The existence of the red in the stripes cannot be confirmed by the photographic evidence.

Fig. F. Aircraft "9" of 161 Fighter Flight.

Fig. G. The "ermine" with light blue (?) wings, the badge of 162 Fighter Flight, as it appeared on the aircraft in Fig. E.

Fig. H. The "ermine" with pink (?) wings, the badge of 161 Fighter Flight, as it appeared on the aircraft in Fig. F.

COLOR KEY

1 black; 2 red (with a darker shade on the turkey's tail); 3 white; 4 yellow; 5 dark blue or dark green; 6 light blue grey; 7 khaki; 8 pink; 9 light blue; 10 leather (glossy black or brown - both colors were used); 11 bronze (black on aircraft right from the factory).

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THE PULAWSKI FIGHTERS

The fighter planes designed by engineer Zygmunt Pulawski, the P-7 and P-11, have been described in many articles and books. However, I would like to add some little-known information that either has never been published before or has been published only in Poland. Some of this information comes from interviews with ex-pilots.

P-7a

Let's start with the P-7a, which is probably the least known of the P-11 series. The P-7a was the direct successor to the P-6, which participated in many aero shows. The first prototype, the P-7, differed from the P-6 only in using a Jupiter VII F engine with supercharger. The production P-7a, however, included more changes. The P-7a was the first Pulawski fighter to have its wings covered with fine corrugated plates (52 grooves in each section with the grooves separated by 5 mm). The plates on both the P-1 and P-6 had much wider-spaced grooves (only 5 or 6 per section). The production P-7a had the grooved plates on the upper surface of the wings joined by flat joints. All earlier Pulawski fighters, including the P-7 prototype, had used so-called "comb type" joints on both surfaces of the wings and on the control surfaces. In this construction, the grooved plates were connected to each other by protruding ribs that formed a "comb". On the P-7a and P-11s, the combs were used only on the lower surfaces while on the upper surfaces the corrugated plates were riveted to the ribs and the joints were flat. The P-7a was powered by the PZSkoda/Bristol Jupiter VII F with a maximum power of 520 hp at 3050 m (1000 ft), and it was armed with two Vickers E 7.9-mm machine guns (changed from 7.7 mm in 1933) with 700 rounds per gun. Maximum speed of ex-works aircraft was about 327 km/hr, rate of climb 10.4 m/s, ceiling 8500 m, and range 600 km. A total of 150 P-7a fighters were produced some of which were armed with the newer FK wz.33 7.9 mm caliber machine guns.

In September of 1939, the L.W. still had 106 P-7a fighters in service. Of these, 40 were at CWL No. 1 at Deblin and other training units, 30 were in first-line units, 25 under repair, and 10 in reserve. The condition of the latter was poor. On 1 September, the first-line P-7a served with the following units: 10 with 123 Fighter Flight which formally had belonged

to the 2nd Air regiment at Krakow but which had, during mobilization, been merged with the third flight of IV/1 Squadron at Brygada Poscigowa; 10 with 151 Fighter Flight assigned to SGO "Narew" (SGO = Samadzielna Grupa Operacyjna or Independent Operational Group) - formerly 5th Air Regiment at Lida; and a further 10 with 162 Flight of the 6th Air Regiment at Lwow, allocated to Armia "Lodz". By this time, the P-7a were very time-worn and should have no longer been serving as a first-line aircraft. They were hardly useful against modern Luftwaffe machines. The engines were extremely worn (these were a second set of engine installed in the mid-1930s) and so speed and climbing were too slow to permit pursuit of even the German recce planes. The Vickers E guns - worn and of poor quality - had a low rate of fire and tended to clog very often. Moreover, since the guns were mounted very low on the fuselage, the pilot could not watch the tracer bullets and shooting was to a great extent blind. In addition, the view from the cockpit was far from perfect because of the engine and wing-root. Despite all these disadvantages, the pilots flying the P-7a managed to shoot down 7 1/2 enemy aircraft (2 1/2 He-111, 1 Do-17, 1 unknown type of bomber, 2 Bf-110, and 1 Hs-126). In addition, they damaged 2 Do-17 and a Bf-110. So, 10 1/2 Luftwaffe aircraft had been eliminated from the fight, but the Polish P-7a units paid dearly with the loss of 21 P-7a and 4 pilots killed in combat. Ppor.pil. Zdzislawe achieve the higher score of all P-7a pilots by shooting down 1 Do-17 and one He-111.

Besides the 30 first-line aircraft, 18 P-7a of the CWL No. 1 at Deblin also took part in the battle. While defending the airfields in the Deblin area, they met enemy aircraft several times, but the only result was forcing several German aircraft to flee.

On 17 September, from 10 to 20 P-7a were evacuated to Romania, where, because of their poor condition and age, they were not used by the Romanian Air Force. About 10 P-7a were taken over by the Germans to form a training unit. It is also rumored that some P-7a were used by the Luftwaffe in 1940/41 for recce flights over Soviet territory. These flights were operated in the evening or late afternoon. It is said that these aircraft were painted black overall, that they carried no markings, and the pilots flew in civilian clothes. In

case one was shot down, the Soviets would have no proof that the aircraft were operated by the Luftwaffe; civilian pilot, no markings, aircraft produced in a no-longer-existing country.

P-11a

The P-11a was the successor to the P-7a and the resemblance was so close that the two types are often confused. However, the P-11a was a much different aircraft. The P-11a had a longer wing span and thanks to modifications to the wing roots, the visibility from the cockpit was much better than for the P-7a. A PZSkoda/Bristol Mercury IVS2 engine with maximum of 575 hp enabled more rapid climbing and a higher maximum speed - about 340 km/hr at 5000 m. Armament consisted of two wz.33 7.9-mm machine guns in the fuselage with 700 rounds per gun. Fifty P-11a were built.

In September 1939, 4 P-11a serves with 112 Fighter Flight, 5 with 114 Flight (both these units had formally been assigned to the 1st Air Regiment at Warsaw but were merged with the Brygada Poscigowa just before the outbreak of the war), 2 with 161 Fighter Flight (6th Air Regiment; Armia "Lodz"), and probably 1 or 2 with 152 Fighter Flight (5th Air Regiment; SGO "Narew"). One P-11a was evacuated to Latvia and one to Hungary. The war-time experience of the other P-11a is unknown.

P-11c

The P-11c, although it had the same basic designation as the P-11a, was an entirely new aircraft. The fuselage had a different shape. The view from the cockpit was improved by mounting the engine 130 mm lower than on the P-11a. The guns were mounted higher on the fuselage to enable the pilot to watch the path of the tracer bullets thereby allowing him to improve his aim. The wing was strengthened to allow two additional guns to be carried in the wings. However, not all P-11c carried wing guns. In 1937, it was decided to mount the wing guns on all P-11c, but at the outbreak of the war only a third of the P-11c had four guns. Some P-11c also carried Philips N1/L wireless. The first 50 production aircraft were fitted with Mercury VS2 engines with maximum power of 600 hp at 4500 m, while the rest were fitted with Mercury VIS2 engines with 630 hp at 4700 m. In practice, aircraft with the Mercury VUI could achieve speeds around 350 km/hr while those with the Mercury VI were able to reach some 365 km/hr. Activities of the P-11c during the 1939 Campaign are well known so I'll not bore the readers with repeating them here.

P-11g Kobuz

The P-11g "Kobuz" is an almost forgotten aircraft that is frequently mistaken for a P-24. Because of the delay in the P-50 "Jastrzab" program, in the summer of 1939, it was decided to install some of the 150 Mercury VIII engines already produced for the P-50 into P-11 airframes. The P-11g was to be produced by PWS, but only one prototype was completed by 1 September 1939. The airframe came from the P-11c, the engine from the P-50, and the enclosed canopy from the P-24. The prototype was test flown at Okęcie in August 1939 at which time it achieved a speed of 390 km/hr. In September, it was flown to Lwow, then to Grodek Jagiellonski, and eventually to Wielick near Kowel, where it was assigned to the Airfield Defence Section. Por.pil. Henryk Szczesny, flying the P-11g,

shot down a German bomber on both 14 and 15 September.

Flying the P-11c

Now some comments about flying the P-11c, mainly from Mr. Wlodzimierz Gedymin who, in September 1939, was ppor.pil in 131 Fighter Flight assigned to the Armia "Poznan". Let's start with the guns. As stated above, the old Vickers on the P-7a often malfunctioned. The wz.33 on the P-11c work very well, sometimes too well. Mr. Gedymin remembers that several times after prolonged use, the guns over heated and continued to fire even after the pilot removed his finger from the trigger. In these situations, the synchronization failed and several times ppor.pil. Gedymin shot holes in his own propeller. These bullet holes were never filled and, since there was no new propellers, Mr. Gedymin, flew his P-11c with a damaged propeller until 6 September. On that day, after shooting down a He-111, he was wounded and had to be hospitalized in Warsaw. He also reports that the aircraft with four guns had a lower speed and poor manoeuvrability and were, therefore, less popular with the pilots. Radios were also not popular. Firstly, because of the laryngophones rubbed against the pilot's necks and made breathing difficult. The laryngophones were replaced by microphones that were fitted on a belt over the pilot's mouth and were even more uncomfortable. Furthermore, many pilots were of the opinion that "listening to the radio" while flying disturbed their control of the aircraft. Many pilots did not switch on their wireless so that they could concentrate on flying.

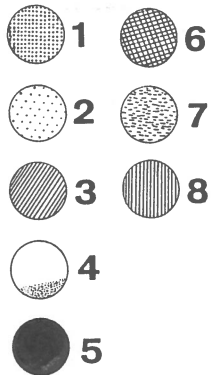
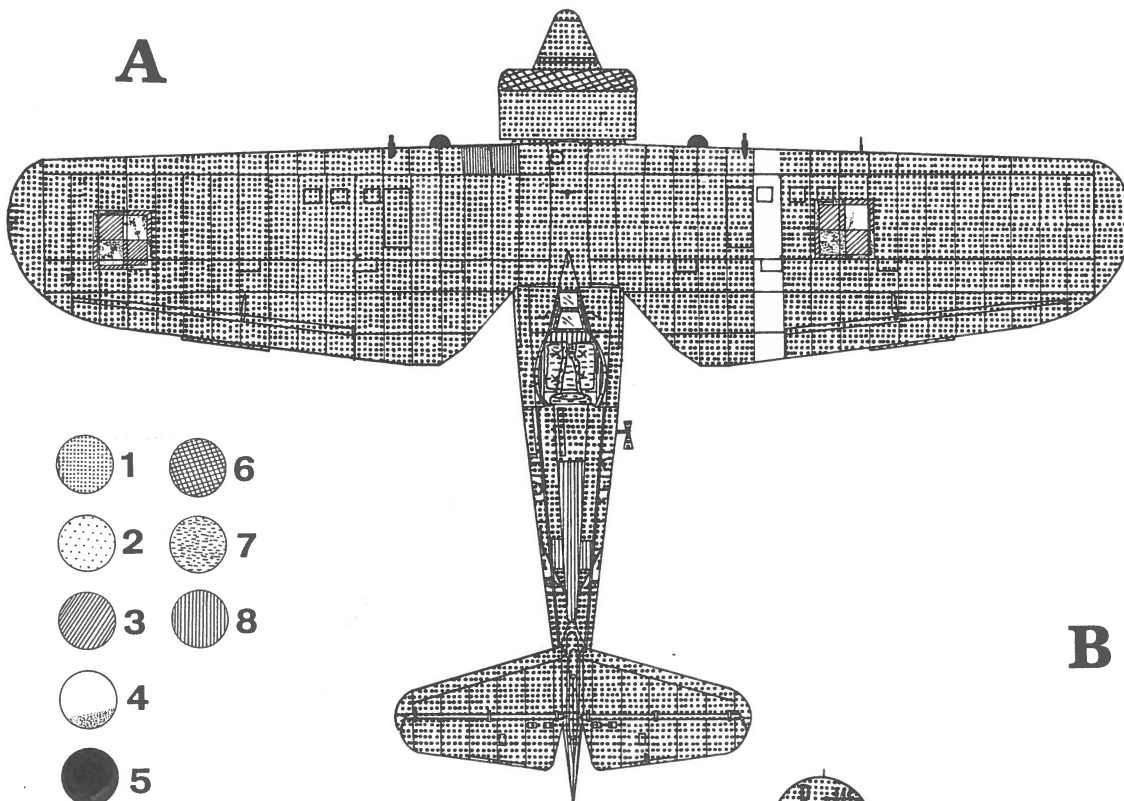
It is worth adding that, in 131 Flight, all aircraft were equipped with wireless. The access to it was difficult since the pilot's seat had to be removed each time the mechanics wanted to fix the radio. That is why, self-made access panels appeared on many P-11c. Some aircraft had these panels on the port side, other on the starboard side, but probably there were also aircraft with panels on both sides. These panels also made access to the compressed air bottle easier. These panels were fitted by the units' mechanics and probably no ex-works aircraft had them.

While speaking about external changes, I must mention P-11c "10" from 113 Fighter Flight flown by ppor.pil. H. Dudwal. This aircraft is shown in four photos taken by German troops. The rear fuselage is seen to have been reshaped, probably as the result of combat damage. The characteristic P-11c "hump" has been removed and replaced by a panel of unpainted metal. Only a small pilot's headrest is preserved and the aircraft resembles a P-11a. An access panels on the port side is also seen on the photos.

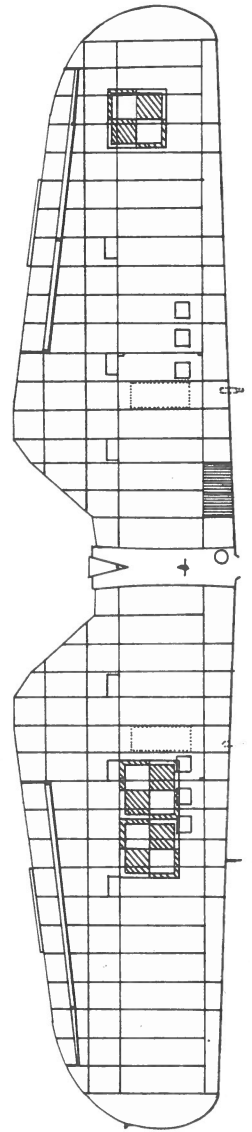
As for the aerodynamic features of the P-11c, Mr. Gedymin remembers it was a perfect aircraft to fly. He says that on landing the aircraft "held the air" very well and it needed no flaps. (Some authors write that the P-11c had flaperons, i.e. the ailerons could be used as flaps during takeoff and landings. This is not true.) It was not necessary to land along a straight line as the direction of landing could be corrected by sideslipping even at the last moment before touchdown. Mr. Glowcznski also commented on the perfect flying qualities of the P-11c.

P. K. Musialkowski (SAFCH #856), ul. Noczmckiego 13m42, 01-948 Warszawa, POLAND.

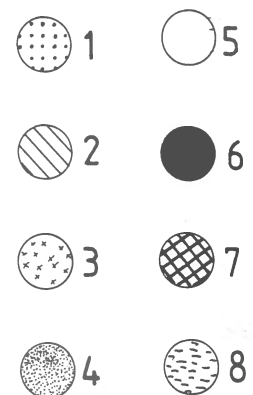
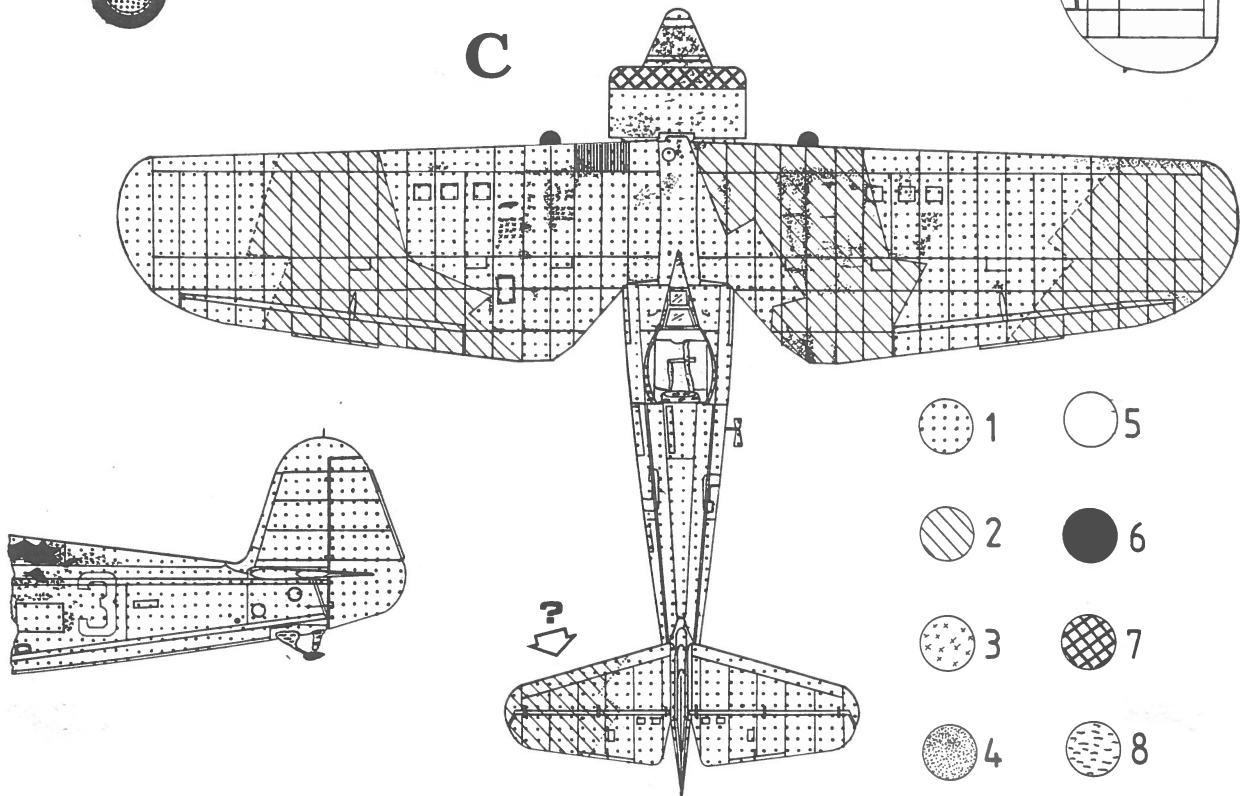
A



B



C



pkm

Fig. A. P-11c of 113 Fighter Flight as flown by ppor.pil Dudwal with the upper part of the fuselage modified. (The aircraft was probably not flown in this configuration.) Note the additional access panel on the port side of the fuselage as well as the white paint partially removed from the chessboards on the upper surface of the wing.

Fig. B. Positions of the chessboards on the upper surfaces of the wings of P-11a and P-11c. On the port side, the position was always the same, but on the starboard side one of two positions was used. Note the difference in the positions of the starboard chessboards on Dudwal's and Dzwonek's aircraft. Note the oil-tank cover on the leading edge of the port wing. It was corrugated plate and had 23 grooves.

Color Key

(1) khaki; (2) light blue; (3) red; (4) white (with areas where the paint was mechanically removed); (5) black; (6) bronze (black on aircraft just from the factory); (7) leather glossy black or brown); (8) natural metal.

Fig. C. A P-11c captured by the Germans. Most probably the aircraft was camouflaged by the Germans. There are no oral or written accounts, no other photos exist of this scheme, and there is nothing else to suggest the use of this

camouflage by the Lotnictwo Wojskowe. The drawing shows the aircraft exactly as it appears in the photos taken by the Germans. The darker color (1) could be Polish khaki since the "3" is definitely the style used by the fighter units of the 1st Air Regiment. In addition, there are no traces of another color on the fuselage and vertical tailplane. The lighter color (2) applied to the upper surfaces of the wing and perhaps to the port elevator and horizontal stabilizer (this area is fuzzy on the photo) may be RLM 02 or some other German color. Dotted lines on the wing mark color separation lines that may not be exactly correct; the photo appears to have been retouched in these places. Natural metal (3) has been exposed and an unidentified color (4) is darker than either camouflage color. White (5). Black (6); the holes on the fuselage do not look realistic but they are definite not the result of retouching the photo. Bronze (7). Leather (8). Note the early type cowl with the small undercut on the trailing edge (typical for the P-11c) and the additional access panels on the port wing and on the port side of the fuselage. Also noteworthy is the lack of national insignia on the fin; was it overpainted or removed? The underwing code W 62 (not shown on the drawings) is one more argument in favor of the aircraft having been repainted by the Germans because the letter "W" was never used as a code letter by the Lotnictwo Wojskowe.

A POLISH ELK

After the PZL P-11 and the PZL-23, the most famous aircraft of pre-1939 Polish military aircraft was the PZL-37 Los. Since the story of its design and development is well known to aviation enthusiasts, this article will describe a few little-known details.

Teething Troubles

During its first year of operational service, several problems arose that indicated the necessity of making several modifications to the PZL-37 design. These changes were immediately made to machines still on the production line, and aircraft already in service were modified as soon as possible. The most serious problem was the mysterious crashes that destroyed eight machines. While some of these incidents were caused by pilot error, there were still a number of crashes in which the pilot lost control of the aircraft through no fault of his own. The pilots who survived reported that when the Los was put into a steep turn, it would fall into a flat spin (falling-leaf) during which the pilot had the feeling of diving and the speed indicator showed "zero". The pilot's natural reaction was to pull out of the dive, but this action was the immediate cause of the ensuing crash.

Factory tests at WP-1 (Wytownia Platowcow Nr. 1 or Airframe Plant No. 1) revealed that it was necessary to move the controls in the opposite direction, that is, to put the aircraft into a dive. Pushing the control column forward stopped the spin and the airplane immediately became obedient to the pilot's wishes.

As a stop-gap measure, an "errata" was made to the pilot's manual, but the company was aware that it was necessary to correct the aerodynamics of the Los. Further testing and analysis resulted in a solution to the problem.

A number of PZL-37 and probably PZL-37bis had the areas of their rudders reduced by cutting off the rectangular section immediately above the upper hinge and extending the fin to fill the gap.

Better Visibility

The engineers responsible for the Los (J. Dabrowski and P. Kubicki) also collected the opinions of the crews that were flying the new aircraft. In general, the crew members were fascinated with the new bomber and its modern equipment, but there were complaints about the limited visibility from the ventral gun station. It was decided to provide all PZL-37B and PZL-37Abis with a pair of small windows close behind the trailing edge of the wing. These windows were built into a large section which was then installed on the aircraft. Both improvements, modification to the rudder and the additional windows, were performed simultaneously on each machine, so there were no aircraft that did not have both modifications. These modifications were applied to all PZL-37 produced in 1939 and to an unknown number of aircraft already in service. It is possible that a number of these latter PZL-37 operated with the modifications unpainted.

In looking over photos of the Los published in books and magazines, perhaps some of you have noticed that the upper part of the pilot's canopy is distinctly darker on some machines. This is not a flaw in the photographic reproduction or some trick of lighting. A number a PZL-37 received canopies with the two upper glass panels replaced with transparent, blue glass to protect the pilot's eyes from direct sunlight. (If the pilot still had trouble with the sun, he could use a special fabric curtain on the inside of the

canopy. (See "PZL P-37 Los, by J.B. Cynk, Profile Publications, page 139.) According to an ex-employee of WP-1, the blue glass had another purpose: it made it easier for the pilot to detect attacking aircraft against the blue sky. This installation was still in the trial stage at the outbreak of the war and, although it appears in the Los manual for the Los, only a few machines had the blue glass panels.

Night Bomber

As should be expected, since the Los was the successor to the Fokker F-VII/3m and Potez XXV, efforts were made to adapt it to the night-bombing role. Unfortunately, not much is known about this project. (Personally, I think that work was stopped before the project was completed.) The only modification known to be discussed was moving the exhausts to the inner sides of the engine in an attempt to hide the flames emitted by the engine which betrayed the aircraft's position at night. This was accomplished by simply interchanging the port and starboard engines. It is not known if the change was carried out on any aircraft, but there are no known example of Los with this modification.

An Opinion from the Enemy

It would be interesting to hear the opinions of the pilots who flew the Los, but no such reports are known. Therefore, we have to be content with the comments of the enemy. It is known that the Luftwaffe captured at least one serviceable Los; this aircraft was displayed during the war at a special exhibit in Vienna. However, no written comments have been located. Since the opinion of the Germans is not known, we will have to settle with comments from the Soviets. The Red Army captured at least three PZL-37; evidence number 72.125 is the only one known. (Reference: "Pogranichnye Vojska SSSR 1939-1941", Moscow 1970.) The type of aircraft was denoted as PZ-LP-37 and it is known that these aircraft were moved to the TsAGI Institute in Moscow. It is not known when (the sources give different dates and locations), but a Russian pilot had trouble keeping his PZL-37 on a straight line while taxiing and he hit a parked I-153 killing the pilot of the fighter. The Russians had problems with the PZL-37, in particular with the throttle levers which operated in the opposite direction from those in Soviet machines. (Polish aircraft used the French system where the throttles were pushed forward to increase speed.) One of the Soviet test pilots said that this was the only "minus" of the Los and that in the Los "you could fly and sing". Is there a better advertisement for the Los?

-letters-letters-letters-letters-letters-letters-letters-letters-letters-letters-letters-

(continued from page 83)

"The other recent Air-Britain publication is a 350 page hard-bound book on the Avro Anson which costs £22.50. It is also a historical monograph which details every aircraft's history with much detail on the operating units. Obviously much of the book is devoted to the RAF, 150 pages in fact, but there is plenty on other Commonwealth countries and other air forces. Also plenty of information on the many civil Ansons and their operators. There are many b&w photos throughout, plus 65

Figures

Fig. 1. PZL-37 Los A, white "1", evidence number 72.11, no underwing codes. This aircraft was purchased in 1938 with money donated by the employees of five Polish banks. Besides the white inscription on the port side of the rear fuselage, this aircraft later carried a white "1" between the inscription and the evidence number and the badge of 212 Bomber Flight (yellow "Great Bear" or "Big Dipper") as background for the inscription. Aircraft 72.11 crashed soon after the official handing-over ceremonies. After repair, it was used as a non-flying instructional machine in the Grupa Techniczna SPL (Technical Group of the SPL) at Warsaw-Mokotow airfield. It was seriously damaged there, but shortly after the outbreak of the war, it was repaired and transferred to Malaszewicze air base. The war-time service of this aircraft is not known, but it was the only Los A to be evacuated to Romania where it then served with the Romanian Air Force.

Fig. 2. A view of the undersides of a typical PZL-37 (A, Abis, and B versions). Note the chessboards with the proportion between the size of the inner square and the outline of about 1:8.

Fig. 3. A view of the upper side of a PZL-37 (A, Abis, and B versions). Note the asymmetrically located chessboards on the wings and the information for locating these insignia on this particular type of aircraft. The chessboards are proportioned 1:5 on the upper surfaces.

Fig. 4. PZL-37 Los B, white "N", evidence number unknown, probably no underwing codes. This aircraft was damaged by he Germans and is well known from several German propaganda photos. (See "le Fanatique de l'Aviation" Nov. 1981). Note the modified rudder and the small window added to both sides of the fuselage over the rear/lower gunner's station.

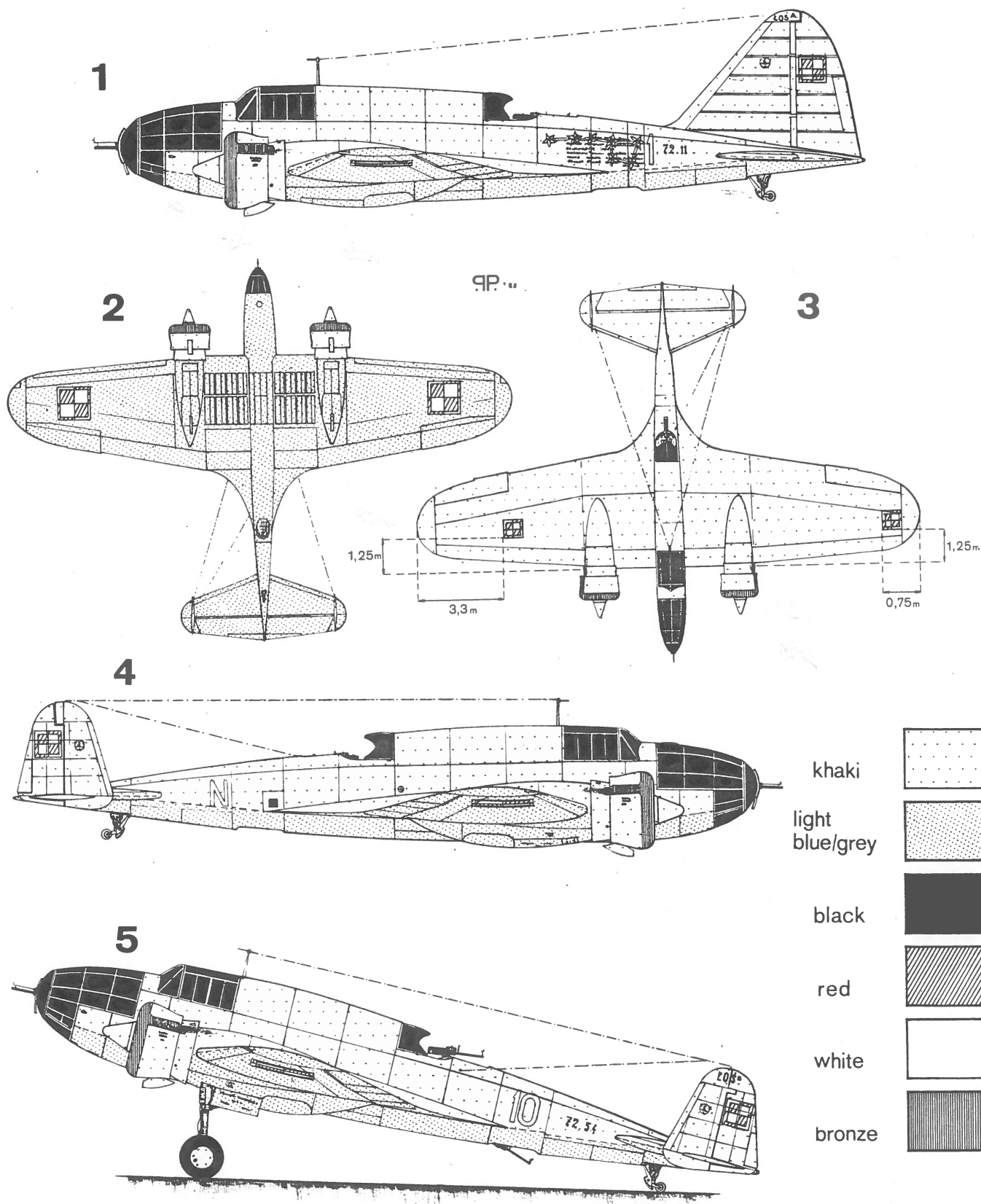
Fig. 5. PZL-37 Los B (or Abis), white "10", evidence number 72.54 (Warning: this information is based on a post-war German source.), under-wing codes unknown. This machine is known from at least two photos. One is a photo of "10" in flight (Profile Publication, "P.Z.L. Los" by J.B. Cynk, page 141) and the other shows "10" during repairs at WP-1 Plant at Warsaw-Okecie airfield shortly after takeover by the Germans. Note on the drawing the retracted undercarriage with bare-metal discs on the wheels.

Pawel Przymusiala (SAFCH #801), ul. Dlugosza 8/27, 01-174 Warszawa, POLAND.

side-views of Anson colour schemes, unfortunately b&w also, of which 21 are RAF, 1 Afghan, 4 RAAF, 1 Belgian, 6 RCAF, 1 Canadian Navy, 1 Egyptian, 3 Irish, 1 Estonian, 1 Ethiopian, 1 Finnish, 1 French AF, 1 French Navy, 1 Greek, 1 Israeli, 1 Iraqi, 1 Dutch, 2 RNZAF, 2 Norwegian, 1 Portuguese, 2 SAAF, 2 South Rhodesian AF, 1 Turkey, 1 (not so small AF) USAAF, plus 6 civil machines.

Tony Morris, Ashbourne House, Marsh Gibbon, Bicester, Oxon OX6 OHW, England.

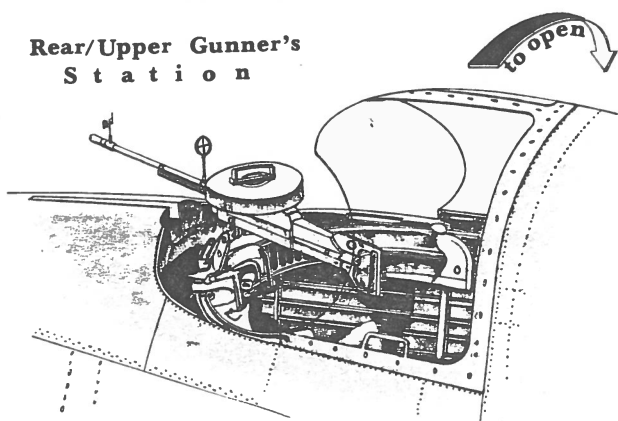
PZL-37 "ŁOŚ"



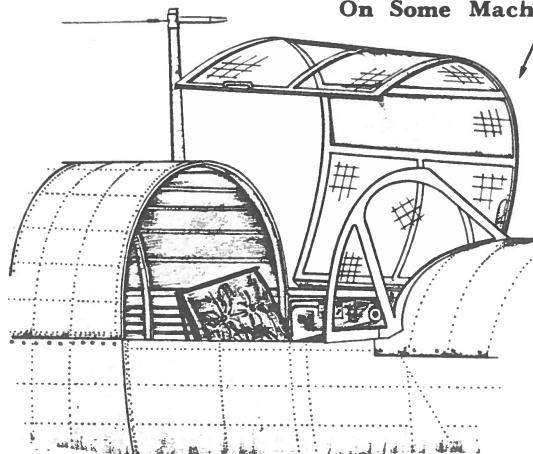
PZL-37 "ŁOŚ"

in details

Rear/Upper Gunner's Station



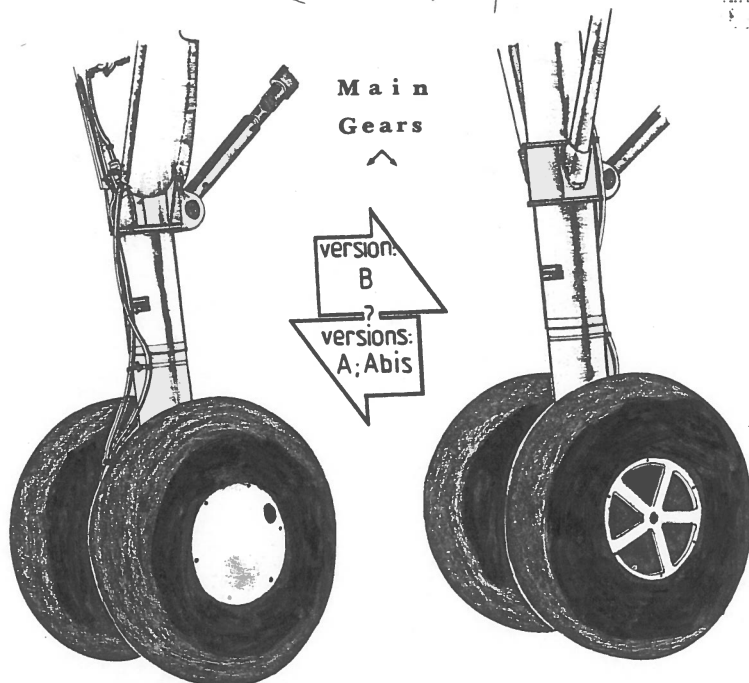
Shaded Area Indicates Which Panels Were Blue On Some Machines



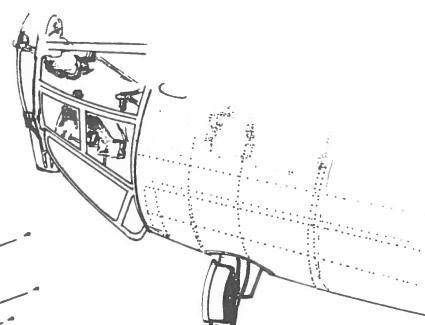
Pilot's Canopy

Main Gears

version: B
versions: A; Abis



9P..

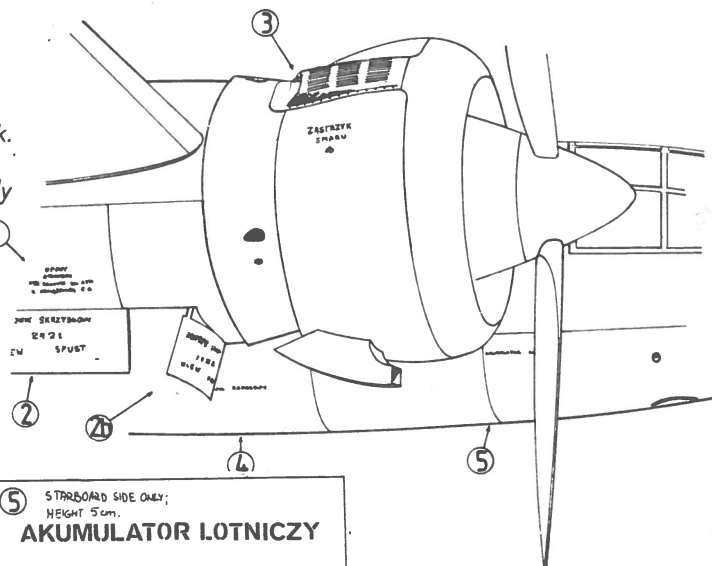


Landing Light (retracted)

STENCILLING

①	OUTER SIDES OF BOTH ENGINES; NOT HIGHER THAN 3,5 cm. OPONY CISNIENIE BEZ BOMB 2,05 ATM Z BOMBAMI +5 %
②	OUTER UNDERCARRIAGE WELL DOORS OF BOTH GEARS; HEIGHT 5 cm. ZBIORNIK SKRZYDŁOWY 242 L WLEW SPUST
③	FORWARD DOOR FLAPS OF BOTH GEARS; HEIGHT 5 cm. ZBIORNIK OPADOWY 118 L WLEW SPUST
④	OUTER SIDES OF BOTH ENGINES; HEIGHT 5 cm. ZASTRZYK SMARU

NOTE: the shape of lettering is similar to that originally used on PZL-37s and color is black. Figures Nos. 1 and 2b are conjectural [visible but not fully legible]. It is also possible that there were some other inscriptions which are still unknown.



④ PROBABLY BOTH SIDES OF THE FUSELAGE;
HEIGHT 5 cm.
ZBIORNIK ZAPASOWY

⑤ STARBOARD SIDE ONLY;
HEIGHT 5 cm.
AKUMULATOR LOTNICZY

SOUTH AFRICAN AIR FORCE

THE SAAF AT WAR 1940-1984 by Bouwers and Louw; 220 pages 24 cm by 30 cm; color and black & white photos, color side-view drawings; hardbound; 1989. Cris van Rensburg Publications, PO Box 29159 Melville 2109, Republic of South Africa.

Notes from the dust jacket: "You are now holding the book that finally brings the history of the South African Air Force gloriously alive. There are more than 750 photos, most of them never published before, to make you a privileged spectator on the spine-chilling adventures of a special breed of daredevils also known as a SAAF pilot and crew. Yes, the book gives you a fascinating account of the SAAF through the Second World War, Korea and, the operational area along the southern frontier of Angola. The Saga recounted here is not only exciting but also accurate and authoritative. The story attached to each photo has been thoroughly researched to vouch for its authenticity. In most cases you will find the names - and the words - of those actually involved in the action described.

"There are action shots of raids into enemy territory, photographs of a number of legendary pilots, with anecdotal notes on their exploits. You will read of innovations introduced by the SAAF born out of hard experience.

"In addition, you will find formal full-colour illustrations of many of the old stalwart aircraft flown during the Second World War; also of the modern aircraft flown in the operational area and elsewhere today. Together with these illustrations we have included detailed information for aircraft enthusiasts, restorers and modelers.

"The book with its unique photographs is the result of a labour of love stretching over many years by two enthusiastic young South Africans, one himself a pilot with the SAAF and the other a physician who would much rather have been a pilot. They pored over thousands of photographs and personal stories - before finally selecting those reproduced here to recall vividly and graphically some of the great actions of the SAAF, actions which go a long way to explaining the world-wide reputation of the SAAF for valour and deadly efficiency."

[Editor's note: One of our South African members has sent us a copy of this excellent book autographed by the authors. He requested that the book be auctioned off and that \$8.00 of the money collected be donated to the SAFCH Sponsorship Fund. The cost of the book is R60 (approximately \$22.00 at the rate of exchange on 28 June 1989). Please send your bid to the SAFCH. The highest offer received before 1 November 1989, will win the book.]

SOUTH AFRICAN WAR MACHINE by Heitman; 192 pages 24 cm by 30 cm; color and black & white photos, hardbound; 1985. Central News Agency, CNA Building, Laub ST., New Center, Johannesburg 2001, Republic of South Africa.

Notes from the dust jacket: "Although the South African armed forces have attracted world-wide media attention in recent years and have become known as the most powerful and effective in southern Africa, comparatively few details of their operations and organization are known. "South African War Machine" briefly describes the history of South Africa's armed forces, outlining their role in the two World

Wars and in Korea and explaining how this background has contributed to the unique make-up of South Africa's defence force today. The weapons, organization and training of each of the South African armed services are fully described. The campaigns in South West Africa (Namibia) against the SWAPO guerrillas are fully described as are the various operation in Angola for the initial South African involvement in 1975."

[Editor's note: Several copies of this book are available from the SAFCH Sales Service.]

AUSTRO-HUNGARIAN MILITARY AVIATION

"I've recently read "Die Flugzeuge der k.u.k. Luftfahrtruppe und Seeflieger 1914-1918" by Hauke, Schroeder, and Totschinger, and my disappointment has caused me to write the following comments directed mainly to those for whom WWI Austro-Hungarian aviation is not their main area of interest. The publications, in English, that best cover the three main areas of interest are:

"(1) FLIERS: 'Air Aces of the Austro-Hungarian Empire 1914-1918' (available from the Champlin Fighter Museum Press, Falcon Field, Mesa, AZ 85205, \$40 plus \$2.50 postage). This is strongest on the personalities of the Austro-Hungarian Army and Navy Air Service. In addition, full color information and illustrations of 50 aircraft flown by the aces and the accompanying extensive captions and 'Color Introduction' portray not only the aces personal markings but also provide an intensively-researched story of k.u.k. colors and camouflage in general. In its 336 pages are also six appendices that cover other aspects of the air services, e.g. Appendix II on the k.u.k. serial number system). Over 250 photos are extensively and accurately captioned.

"(2) MARKINGS & CAMOUFLAGE: 'Markings and Camouflage of Astro-Hungarian Aircraft in World War One': a 12-part series appearing in Volumes 17, 18, and 19 (1986, 1987, 1988) of CROSS AND COCKADE (GREAT BRITAIN). Back issues are available for \$16 per year, postage included, from Paul Leaman, Cross Cottage, The Cross, Bramham, Wetherby, West Yorkshire LS232 6QB UK. This series details the story of markings and camouflage on all the aircraft used by the Astro-Hungarian Army and Navy Air Services. All markings (national, squadron, serial, stencils, etc.) and all colors used are covered. Over 350 photos and many drawings are used to illustrate the subject, many published for the first time. All photos are beautifully printed and extensively and accurately captioned. The series is based on 11 years of research utilizing original documents, interviews with survivors, fabric samples, etc.

"(3) AIRCRAFT: 'Origins and Development of Austro-Hungarian Aircraft in World War One' (approximate title). This long-awaited work by Peter Grosz, George Haddow, and Peter Schiemer is completed and will be released by the Smithsonian Press later this year or early in 1990. It cover every type and prototype aircraft flown by the Austro-Hungarians. It will be the finest reference on its topic. It will be lavishly illustrated by photos and over 100 of George Haddow's exquisite 3-view drawings. It is the result of two decades of research and I personally cannot imagine how it could ever be surpassed.

"Unfortunately, the Hauke, Schroeder, Totschinger book is just not in the same league

with any of these three works. It has many photos, most of which are nicely printed. Their captions are generally quite brief, and often wrong. The numerous outline side views are crudely done and, quite often, incorrect. Nowhere is there any indication of real, solid research documentation. The multiple color side views are crudely produced, and a very large portion seems to be the result of guesswork and fantasy. Those color drawings which are correct seem to have drawn heavily on the above-mentioned sources. The shame of this is that, unless the reader is fairly knowledgeable in these matters, he will have no way of knowing which illustrations are documented and correct, and which are merely guesswork. My recommendation is that, if the references listed above don't satisfy your thirst for Astro-Hungarian aircraft photos, and you still have a spare \$60 in your pocket, then buy this book for its photos. I'm sorry - I would really like to have been able to be more positive."

Martin O'Connor (SAFCH #366), 37 Cypress St., Floral Park, NY 11001.

A NEW EDITION OF AN OLD STANDBY

UNITED STATE MILITARY AIRCRAFT SINCE 1909 by Swanborough and Bowers; 766 pages 14 cm by 22 cm; photos and 3-view drawings; hardbound; 1989. Putnam Aeronautical Books, c/o Conway Maritime Press, 24 Bride Lane, Fleet St., London EC4Y 8DR. £ 35.00.

Since a Putnam book needs no introduction, I'll let the dust jacket do all the talking: "This classic reference work was last published in 1971. Since then US Air Force and Army Aviation has undergone significant changes in aircraft equipment deriving from radical rethinking of their tactical and strategic role following the end of the Vietnam war. Consequently, this new edition has been almost rewritten with extended and more detailed entries on aircraft in service in 1971, plus coverage of over twenty entirely new types that have been introduced since then.

In addition to this new material, the entire text has been reviewed and much new and updated information is included for the older types as well as the new. The introductory sections on designations, colouring and markings have been thoroughly revised, as has the appendix on balloons and airships. Furthermore, the illustrative content of the book has also been expanded, with 14 additional general arrangement drawings, over 50 extra photographs and in numerous cases better examples substituted for photos used in previous editions."

CHINOOK DESCRIBED

BOEING HELICOPTERS CH-47 CHINOOK by Anderton and Miller; Aerofax Minigraph 27; 56 pages 21 cm by 28 cm; softbound. Aerofax Inc., PO Box 200006, Arlington, TX 76006. \$7.95.

It gets harder and harder to review the new books from Aerofax. For someone familiar with Aerofax's Minigraphs, no review is necessary because the format remains the same and the quality is consistently high. For someone who has not seen one of these books, no amount of words would prepare him for the quantity and quality of information contained in one of these books.

The Minigraph on the CH-47 Chinook is well up to the high standards set by this series. The text is extensive and authoritative. The first 83 photos are of aircraft and the next 120 photos are of interiors and details.

Interspersed among the text and photos are numerous tables and sketches. The usual 8-page fold out contains eight color photos of aircraft (including a CH-47C of the Nigerian Air Force in a colorful dark green, light green, light tan camouflage and a unmarked Libyan military Chinook in a desert scheme), 3 color photos of the interior, 8 side-view drawings (one Imperial Iranian Army Aviation bird), and 1/100-scale drawings.

Of particular interest to SAFO readers will be the section on "Foreign Customers". Thirty-three column-inches are used to describe the CH-47s used in 17 countries (Argentina, Australia, Canada, Egypt, Greece, Italy, Japan, Libya, Morocco, Nigeria, Republic of Vietnam, Republic of South Korea, Spain, Taiwan, Thailand, and the United Kingdom). Seventeen photos in this section show the aircraft in the markings of Argentina, Australia, Canada, Iran, Italy, Japan, Libya, Spain, UK, Vietnam, and Thailand.

If you have not yet built your Airfix kit of the Chinook, or, if you're a "rotor head", you'll find this book invaluable.

1987 MODELING INDEX

INDEX TO MODEL PERIODICALS 1987 by Cardwell; 235 pages 21 cm by 28 cm; softbound. Hippogriff Publications, 111 E. 5th, Bonham, TX 75418. \$8.50 plus \$1.00 postage in North America and \$2.00 elsewhere.

With the publication of the 1987 edition of his mammoth compendium, Paul Cardwell (SAFCH #266) is almost on schedule. The 1987 edition maintains the now familiar format indexing about every conceivable aspect of modeling that appeared in 55 modeling, and related, publications from around the world. Chapters and sections of interest to SAFO readers include: Static Scale: drawings, scratch plans, conversions, superdetailing, kit construction and correction; Color Patterns: aircraft by period; Articles: history by subject; Reviews: books by subject.

In keeping with the theme of this issue, let's see what was published on the Polish Air Force in the September Campaign during 1987. Drawings: P-7 and P-11c in Mitteilungen; Conversions: Fokker F.VIIA/3m from Frog/Novo Southern Cross in Aircraft Modelworld; Superdetailing: P-7 in Mitteilungen; Color Patterns: CANT 506B in SAFO. Maybe not a vintage year, but still not bad.

This Index is recommended to anyone who does not subscribe to all 55 magazines or who does not keep a cross-referenced index on the magazines to which he does subscribe.

A QUARTERLY MAGAZINE FROM PUTNAM

THE PUTNAM AERONAUTICAL REVIEW, Vol. 1, No. 1; 68 pages 23.5 cm by 31 cm. Single copies £ 4.00. Subscription (4 issues per year) £ 16.00 (\$33.00 USA, \$39.00 Canada, £ 18.00 elsewhere). Conway Maritime Press, PO Box 10, Teignmouth, Devon, TQ14 9HH.

Every aviation enthusiasts know that the name PUTNAM is synonymous with quality publication. There old titles occupy an honored place in every library and their new editions and new titles are eagerly awaited. It is, therefore, no surprise that the first issue of "The Putnam Aeronautical Review" is a class act; a distinctively large page size, slick-paper covers, sturdy binding, attractively laid-out pages, excellently-reproduced photos, and well-written articles.

The cover story on the VC-10, which occupies 36 pages of the total 64 pages, is actually six articles by different authors: "Personal Overview & Perspective", "In RAF Service Today", "A Niche in History", "Two Operational Analyses", and Engineering Pedigree of a Thoroughbred". The article on "Wingtip Technology" is informative and surprisingly interesting.

Of greatest interest to the readers of SAFO is the article on the "Istres-Damascus-Paris Air Race" of 1937. Originally conceived as a transatlantic race to commemorate the 10th anniversary of Lindberg's flight, it was moved to Europe when the US refused to cooperate. The Italians, determine to show the superiority of their aircraft, entered 8 specially modified bombers, 6 SIAI S.79 and 2 Fiat BR.20A. The French entered several transport aircraft: Breguet 470 Fulgur, Farman 2231, Bloch 160, and Caudron 640. England was represented by a couple of sportsmen-pilots flying a de Havilland DH-88 Comet. The race was a fiasco. The only thing that prevented the Italian from sweeping the field with their planned "formation" landing was refueling mistakes in Damascus and bad weather on the return leg to Paris. Even so the S.79s took the first three places with the average speed of the winner 58 km/hr greater than the fastest French plane which finished 5th. The Comet finished 4th. The author of this article, Roberto Gentilli, weaves a suspenseful tale which is accompanied by photos of all the competing aircraft.

[Editor's note: One copy of the premiere issue is available from the SAFCH Sales Service.]

A JOURNAL FOR WWII ENTHUSIASTS

WW2 JOURNAL, Vol. 1, No. 1. 36 pages 14 cm by 22 cm; Sample copy \$2.00 (\$3.00 outside North America). Subscription (monthly) \$20.00 (\$30.00 outside North America). Merriam Press, 218 Beech St., Bennington, VT 05201.

Between 1976 and 1981, Ray Merriam (SAFCH #187) published a magazine for WW2 enthusiasts consecutively named "World War Enthusiast 1939-1945", "WW2 Journal", and finally "The Military Journal". Now, after a hiatus of 7 years he's back with a monthly "WW2 Journal" which begins all over with Vol. 1, No. 1.

The premiere issue consists mostly of personal recollections. The two exceptions are a reprint of part of a British intelligence report on the German four-wheeled armored car SdKfz 223, and 6-page conversion article for changing modeling the Bf 109K-4/R3 from a kit of the Bf 109G-10/R3.

[Editor's note: A sample copy of this issue is available from the SAFCH Sales Service.]

1/72-SCALE PROTOTYPES FROM HUMA

HENSCHEL HS-132, 1/72-scale injection molded kit; 16.00 DM plus 4.00 DM post from Huma Modell, Kilianstadter Str. 9, D-645 Hanau 6, WEST GERMANY.

While I would much rather have Huma do some more kits of WWII German trainers that can be finished in the markings of some small air force, e.g. FW-58 or Go-145, I must admit that I am attracted to one-off prototypes. The HS-132, looking like a souped up He-162, is most unique because of the prone-pilot position. One prototypes was almost completed when the war ended.

The kit is molded the the now familiar Huma style. The kit contains 29 parts nicely

molded in white plastic with nicely engraved panel lines. The landing gear struts are over simplified. The nose gear has the strut and wheel molded in one piece and looks pretty bad when compared to the photo on the instruction sheet. However, if you're a real modeler you either scratch you own or keep your mouth shut.

The prominent glazed nose is commendably thin and very well molded. Decals are simple and unnecessary if you finish the model as the unmarked prototype. Crosses and swastika are furnished for anyone wishing to complete his model as a possible service machine. The instruction sheet is, as usual, outstanding.

Definitely a kit for anyone who likes to build the unusual.

MESSERSCHMITT P-1101, 1/72-scale injection molded kit; 20.00 DM plus 4.00 DM post from Huma Modell, Kilianstadter Str. 9, D-645 Hanau 6, WEST GERMANY.

With its ground-adjustable swept wings, the P1101 was, if anything, more bizarre than the Hs-132. Bell engineers studies the incomplete aircraft before designing their adjustable swept-wing X-5.

The Huma kit consists of 48 parts molded in the usual white plastic with the usual nicely engraved panel lines. The canopy is small but effectively molded. Again, the landing gear, especially the nose gear, are over simplified. Alternate parts are provided for building either the conventional tail of the prototype or the proposed T-tail version. Also, the engine can be built either enclosed or fully exposed. I cannot imagine anyone passing up the chance to build the exposed engine, so the inclusion of a basic jet engine is greatly appreciated. Since the engine will need a lot of added parts, the inclusion of a clear photo of the engine on the instruction sheet is most welcome.

The decals provide an instrument panel and markings for three version: "Me-P11-1 V1" for the otherwise unmarked prototype as seen at Oberammergau, the painted on machine guns applied by Bell, or the crosses for a hypothetical service machine.

Once again, a nice kit for any modeler who does not mind building a model of an aircraft that never left the ground. And, best of all, you do not have to put a swastika on it.

1/48-SCALE VACUFORMS FROM SIERRA

CURTISS P-1 HAWK, 1/48-scale vacuform kit; Sierra Scale Models, PO Box 1, Challenge, CA 95925. \$19.95 plus \$3.00 postage.

It is my pleasure to introduce SAFO reader to the line of vacuform kits made by SAFCH member Bob Norgren of Sierra Scale models. Bob has an extensive line of 1/48-scale vacuform kits of WWI and inter-war aircraft, and I've taken the liberty to review one of my favorites: the Curtiss P-1 Hawk.

The kit is molded on a single sheet of white plastic, 8.5 in. by 11 in., of substantial thickness. The parts consists of two fuselage sides, double surface wings and tail surfaces, external fuel tank, radiator face, pilot's seat, wheels, landing gear struts, and spinner (split horizontally). Used with out modification, the fuselage makes up into a P-1B, but an alternate nose section is provided so that you can build a P-1A or P-1C. The molding of the parts is very crisp and the wing rib detail is properly subdued. The engraved panel lines can be improved by a little cleaning up and the stitching is almost invisible and certain to disappear under a

couple of coats of paint. I am very impressed by the depth of the "draw" achieved on this sheet without producing any thinning of the plastic.

Flash-free cast metal parts are provided for the propeller, the "N" struts, and the cabine struts. The 12-pipe (each side) white metal exhaust will need drilling out and removal of flash form between the pipe. For some strange reason, the landing gear struts and not provided in white metal.

The instruction sheet has a nice 1/48-scale drawing which is annotated to describe what parts have to be scratch built. There are no decals.

The Sierra Scale Model kit of the Curtiss P-1 should make up into an attractive model without much effort. With a little work, it could be a knock out.

HANSA-BRANDENBURG W.12, 1/48-scale vacuform kit; Sierra Scale Models, PO Box 1, Challenge, CA 95925. \$19.95 plus \$3.00 postage.

To add a little balance to the review of Sierra Scale Model kits, I thought I'd say something about one of Bob's WWI kits. The H-B W.14 float biplane is molded on two sheets of 8.5 in. by 11 in. white plastic of substantial thickness. Again, the deep "draw" does not thin the plastic. The molding is crisp and the engraved surface detail needs a little cleaning up. The parts consist of two fuselage halves, double-sided wings and tail surfaces, 2-piece floats, pilot's seat, and struts. The metal parts are again flash free, and consist of a propeller, engine, rhinoceros-horn exhausts, radiator, 2 machine different types of machine guns, and an extra drum of ammunition. The details on these castings are beautiful.

The instruction sheet contain adequate text and a nice set of 1/48-scale drawings. A drawing of the interior shows the position of the floor, bulkheads, firewall, seats, and other interior detail. There are no decals although Americal/Gryphon decals are recommended for the naval three-color hexagonal camouflage. This kit should work up into a very nice model that would look particularly good if finished in Dutch colors.

As can be seen from these two reviews, Sierra Scale Models kits display a consist high quality of excellence. They can be unqualifiedly recommended to anyone who has experience in building vacuform kits.

[Editor's note: A limited number of Sierra Scale Models kits are available to SAFCH members at a reduced price. See SAFCH Sales Service listing.]

B-26 INVADER PROJECT?

"I've recently started some, as yet desultory, research on the A-16/B-26 Invader in small air force service. The subject is certainly interesting and would make a nice SAFO Project, although I hasten to add that I may not be the right person to do this. Perhaps there is someone who has started such a project? Either way, I'd be interested in hearing from anyone who can help: (1) Did Laos operate any Invaders, or is this just another rumor? (2) Does anyone have information on the Invaders operated by: Congo, Biafra, China and the anti-Sukarno and anti-Duvalier insurgents? I'm also seeking illustrations of RAF Invaders.

"If enough information surfaces on these (or any other weird and wonderful Invaders) I'll be glad to do some drawings for the SAFO."

Leif Hellstrom (SAFCH #786), Servituts-vagen 3, S-145 59 Norsborg, Sweden.

A COLORFUL BELGIAN FALCON

F-16A CONVERSION KIT; DECALS; & PAINT: 1/48- and 1/72-scale; DACO, c/o Danny Coremans, Provinciestr. 8, 2018 Antwerpen, BELGIUM.

In the past few years, some spectacular paint schemes have appeared on European combat aircraft to commemorate special anniversaries. Among the most colorful have been the Mirage 5 and F-16 of the Belgian Air Force. Photographs of these aircraft have appeared in the aviation press, and IPMS-BELGIUM has joined the celebration with a series of cover articles on these aircraft. Now, from Danny Coremans in Belgium, comes decals, paints, and conversion parts in both 1/72- and 1/48-scale for F-16A 'FA-49' "Blue Falcon" commemorating the 45th anniversary of 349 Squadron.

CONVERSION KIT: Anyone planning to build this colorful F-16As will need to make some modifications to the available kits. Most noticeable are the extension at the base of the vertical fin and the enlarged horizontal stabilizers. These parts are included in a resin-cast kit which consists of the best cast resin parts I have ever seen. The stabilizers are razor thin and the inscribed panel lines are as good as you'll find on any injection-molded kit. This kit includes the ECM pack that fits inside the fin extension and the lights mounted on both sides of the intake. The 1/48-scale kit cost 200 Bf and the 1/72- scale kit costs 150 Bf.

DECALS: The decal sheet for the 1/48-scale kit, measures 11 cm by 29 cm and is printed in black & white and includes everything needed except roundels. (1/48- and 1/72-scale roundels are available from Danny for 120 Bf each.) Registration is excellent and the printing is sharp. These decals cost 230 Bf for 1/48-scale and 150 Bf for 1/72-scale.

PAINT: A photo on the cover of IPMS-BELGIUM's KIT #70 (summer 1988) shows 'FA-49' in its special blue and white color scheme, and inside there is a color chip for the special blue paint used on this aircraft. For anyone reluctant to mix paint to match the color chip, a ready-mixed paint is available for 45 Bf.

The above prices do not include postage which is 45 Bf for the decals and 55 BF for the paints and kits. [Editor's note: one of each of these for 1/48 scale is available from the SAFCH Sales Service.]

Also available from Danny are decals and paints for Mirage 5 (no conversion kit necessary here) 'BA-45' 'Milky Way' in its special color scheme marking the 70th Year of 2nd Squadron; 270 BF for the 1/48-scale decals and 180 Bf for the 1/72-scale decals; and 90 Bf for a pair of paint jars (medium and dark blue).

Danny is also offering a pair of outstanding 1/72-scale resin-molded kit of the SF-260 (military or civilian decals) for 750 Bf. A review of this kit will appear in the next issue of SAFO.

RUSSIAN INSTRUCTION MANUALS?

A couple of strange books have been received in the editorial office. They are written in Russian so I hesitate to even guess at the titles, but they appear to be some kind of instruction manual; one for the Mi-8 and the other for the L-410. Both books show details in engineering drawings. As with all Sales Service items, these are available on a money-back guarantee, although I will ask you to pick up postage both ways. See Sales Service for price.

